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Volume 237 DECEMBER 18, 1947 Number 25

ANESTHESIA WITH INTRAVENOUS PENTOTHAL SODIUM AND LOCAL NERVE BLOCK IN GYNECOLOGIC SURGERY*

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WORCESTER, MASSACHUSETTS

THE use of Pentothal Sodium as an intravenous anesthetic agent has found wide acceptance in the field of gynecologic surgery. This is probably related to the following basic considerations: the high incidence of satisfactory muscular relaxation in this field of surgery as a consequence of antecedent pregnancy; and the minimal intensity of reflex stimulation of respiration from surgical trauma in the areas of lumbar and sacral autonomic nerve supply during pelvic surgery. Quantitative and pneumographic observations made during the past three years in pursuance of a routine surgical practice in which intravenous Pentothal Sodium combined with local nerve block has provided the anesthetic of choice in 60 to 70 per cent of 2000 cases of general surgical procedures have elucidated the variations in reflex stimulation of respiration not only in the peripheral area of distribution of the nerves from the lumbar and sacral segments of the cord but also in the areas of distribution of the peripheral nerves derived from the other neurologic segments.

A sufficient volume of gynecologic surgery is included in this over-all experience to warrant a detailed evaluation of this combined method of anesthesia. In the total of 2000 general surgical cases operations were performed under Pentothal Sodium in 450 cases that were in the field of gynecologic surgery. Of this selected group, there were 236 intra-abdominal major gynecologic procedures, 40 major vaginal procedures (vaginal hysterectomy, Fothergill operation and interposition) and 170 minor vaginal procedures. Any analysis of such an experience should be made in the light of the major physiologic facts revealed in this study as they relate to the neurospecific segmental character of the traumatic reflex stimulation of respiration in the several neurologic segments of the body. Specifically, three neurologic segments are traumatized surgically during surgery in the pelvis. The incision and closure of the abdomen, as well as the retraction of the abdominal viscera upward for exposure of the pelvis, are carried out in the strongly reactive areas of distribution of the thoracic nerves; the removal of the uterus itself is carried out in two different neurologic regions of minimal reactivity — the areas of the lumbar and sacral autonomic nerves.

In general it may be stated with reference to the over-all quantitative requirements of Pentothal Sodium in any particular surgical procedure, that the rate of administration will be related to two determining factors: the need for the drug in any particular case as determined by the rate of metabolic destruction of the drug, and the duration of the operation and its type according to the neurologic segment in the peripheral area of distribution of the nerves of which the operation occurs. Detailed quantitative studies have revealed no other important determinant of the rate of utilization of the drug, such as age, sex or weight. Patients of the same sex, age and weight who undergo identical operative procedures show extreme variations in the quantity of Pentothal required for anesthesia. This can be related only to the varying individual rates of destruction of the drug and to the varying intensities of traumatic reflex stimulation of respiration. The prolonged operations entail progressive severance of pathways of nerve conduction that also progressively reduces the number and intensity of stimulating pain impulses transmitted centrally to the respiratory center. As a corollary, this effect steadily reduces the reflex stimulation of respiration and thus diminishes the quantity of Pentothal required to control respiration. With adequate evaluation of these factors there is no residual concrete evidence to indicate the occurrence of any so-called "cumulative action" of the drug. On the contrary, with reflex factors well controlled by procaine field block, there seems to be ample evidence of fixed, level, basic need for the drug in each patient, even over an extended period.

*Presented at a meeting of the New England Obstetrical and Gynecological Society, Worcester, Massachusetts, May 29, 1946.

†Surgeon, St. Vincent's Hospital.

All intra-abdominal pelvic operative procedures in this group of gynecologic cases were carried out under anesthesia by combined intravenous drip of Pentothal Sodium in a 1 per cent solution and local nerve block by procaine in a 1 per cent solution. The Pentothal was administered by infusion during the induction period at a rate of 250 drops a minute until the patient lost consciousness and stopped counting. No further administration of the drug was made until the early irregularities of respiration returned to normal. Subsequent induction fractions were given in quantities of 10 cc. for patients under fifty years of age, with a minute intervening between fractions, or in quantities of 5 cc. in thin, small patients over fifty years of age, with two minutes intervening. These induction fractions were repeated for an average of two to four fractions, or for as many fractions as were needed to reach the point of complete induction of surgical anesthesia. Induction was never carried beyond the point of loss of motor response to a pinch of the inner arm or axilla with an Allis forceps, except as further administration of the drug was balanced against the stimulus of respiration by the surgeon who was making the incision. The final end point of complete induction was taken as that at which, in the unconscious patient, there was neither motor response nor undue reflex stimulation of respiration in response to sectioning the body wall.

Subsequent maintenance fractions of Pentothal are administered during the course of the surgical procedure at the rate of 130 drops a minute, each fraction being given when recurring reflex stimulation of respiration by surgical trauma manifests itself. Care is taken never to permit an anesthetized patient to re-enter a too light plane of anesthesia in which the intensity of the reflex stimulation of respiration, particularly in the thoracic-nerve segment (the base of the neck to the symphysis pubis), would handicap the surgeon by disturbing the quiet of the operative field. These subsequent maintenance fractions are limited to quantities of 5 cc. with at least one minute intervening between fractions, if the complete induction dose has been less than 75 cc. (0.75 gm.). In contrast, when the induction dose is over 75 cc., subsequent maintenance fractions of 10 cc. each are administered with at least a minute intervening. These fractions are given only to the point of re-establishing control of the reflexly stimulated respiration, the one exception being that, when a local procaine field block (anterior splanchnic, intercostal or pelvic nerve) supplements the Pentothal anesthesia, it should be determined empirically whether the fractions should again be reduced to 5 cc. quantities because of the diminished reflex stimulation of respiration. In the abdominal approach to pelvic surgery there were a handful of operations done in the presence of extreme obesity in which Pentothal had to be discontinued and ether substituted because of the overly active stimulation of respiration by upward retraction of the abdominal viscera against the diaphragm. A few cases were rejected for Pentothal anesthesia primarily because of an anticipated unsatisfactory respiratory experience from this compression reflex that is discussed below. In vaginal operative work a method of continuous administration of Pentothal and ether is used in which after the usual induction dose of Pentothal in 1 per cent solution, the drug is administered continuously in a 0.5 per cent solution at the rate of 30 drops a minute. Frequently, a 0.25 per cent solution is used at the rate of 30 drops a minute to avoid respiratory depression. Ether is administered continuously at the rate of approximately 28.3 gm. an hour. These minimal quantities of drug in combination provide an extremely quiet, satisfactory anesthesia for vaginal operative work. In combined vaginal and abdominal pelvic surgery after a 2-gm. ceiling of Pentothal has been reached, ether alone is used to complete the operation.

Transincisional procaine block of the intercostal nerves to the lower half of the rectus muscles is carried out after complete incision of the skin, subcutaneous tissues and fascial anterior layer of the rectus sheath. Injection of these nerves is made at the outer border of the rectus sheath at points 1.5 cm. apart, 2 or 3 cc. of procaine solution (1 per cent) being injected at each point. An additional 5 cc. is injected deeply into each rectus muscle at the upper angle of the incision aiming at the outer sulcus, where the intercostal nerves enter the sheath. This transincisional procedure requires from 30 to 40 cc. of procaine solution, and is easily accomplished in two or three minutes. It provides a flaccid paralysis of the rectus muscles such as obtains in spinal anesthesia or deep third-stage ether anesthesia. Only respiratory inactivation of the other abdominal muscles, which is easily accomplished by Pentothal, and not paralysis is needed to provide a satisfactory operative field. In cases in which a pelvic field block is done, 4 cc. of procaine is injected retroperitoneally in the region of the superior hypogastric plexus (lumbar-autonomic) immediately below the promontory of the sacrum. An additional 4 cc. is injected deeply in the region of the inferior hypogastric plexus (sacral-autonomic); each round ligament is injected at its outer end with 1 cc. of procaine solution; at each side of the cervix 3 cc. of procaine is injected into the paracervical and parametrial tissues in which the large ganglions of Frankenhäuser lie. Although it does not greatly reduce the quantity of Pentothal used, such a block assures immobility in the abdominal field by completely eliminating reflex activation of the abdominal muscles during expiration as a part of the traction reflex discussed below.

Relaxation of the rectus muscles is routinely produced by procaine nerve block in this method.

Relaxation is never required of Pentothal alone, since muscular relaxation is frequently not achieved under Pentothal alone at a plane of anesthesia that is quite satisfactory in every other respect; conversely, to require muscular relaxation in such cases sometimes entails precipitating a degree of respiratory depression that is wholly unnecessary from all other aspects of a satisfactory degree of anesthesia. The routine use of rectus sheath block is justified by a study of the incidence of full, flaccid muscular relaxation in a series of 100 consecutive cases that had been carried to a satisfactory plane of surgical anesthesia in all other respects (unconsciousness, and the absence of motor response or of undue reflex stimulation of respiration by surgical trauma). An analysis of these cases shows that a striking relation exists between a satisfactory degree of relaxation of the rectus muscles under Pentothal anesthesia alone and the experience of a previous pregnancy with its associated stretching of the abdominal muscles. Of 36 female patients exhibiting a satisfactory degree of relaxation of the rectus muscle at an otherwise adequate plane of anesthesia, 26, or 72 per cent, had experienced a preceding pregnancy. Of 35 female patients who failed to exhibit a satisfactory degree of relaxation at an otherwise satisfactory plane of anesthesia, there were 25, or 71 per cent, who had not experienced previous pregnancy. In a group of 29 male patients, all spared by nature from this physiologic stretching of the abdominal muscles, there were only 3, or 13 per cent, who exhibited satisfactory muscular relaxation, whereas 26, or 87 per cent, failed to exhibit such relaxation. A second grouping of the figures, which encompassed 41 female patients who were subjected to identical surgical procedures through similar incisions (appendectomy through a low right paramedian incision), all reflex factors involved being thus stabilized, showed that of 13 patients who exhibited satisfactory muscular relaxation at the usual plane of anesthesia, 11 had experienced previous pregnancy; on the other hand, of the 28 patients who failed to exhibit satisfactory muscular relaxation, 23 had not previously been pregnant. Procaine injection of the rectus muscles avoided need of a deep plane of Pentothal anesthesia, with its concomitant depression of respiration, and achieved an eminently safe type of anesthesia.

The more powerful intra-abdominal reflexes that condition muscle tensing can also be controlled by the supplemental use of cyclopropane, ether or curare with Pentothal instead of procaine, as shown by the pneumograph, but not so effectively with nitrous oxide and oxygen. In a group of 450 gynecologic operations carried out under combined Pentothal and local nerve block there were only 2 deaths, both of which occurred during convalescence. One was due to an unannounced massive pulmonary embolus, and the other to fatal uremia secondary to diabetic acidosis. This gives an over-all mortality of 0.4 of 1 per cent for the entire group and 0.7 of 1 per cent for the major surgical procedures. No pulmonary complications other than infarcts of embolic origin were encountered.

A quantitative study of the effect of procaine field block in pelvic surgery on the rate of utilization of Pentothal was made. This study parallels two previous reports, one in cholecystectomy (anterior splanchnic block) and the other in radical mastectomy (intercostal nerve block). Two series of hysterectomies were investigated for comparison. In the first, 10 hysterectomies were done under Pentothal and rectus sheath block alone without procaine field block of the pelvis; in the second, 10 hysterectomies were done with supplemental procaine field block of the pelvis, as described above. The two series are compared with each other only on the basis of the time consumed and the quantity of Pentothal administered during the performance of the hysterectomy per se. This excludes the time interval and the drug administration pertaining to the opening and closure of the abdomen, and the packing up of the viscera. This restriction is necessary to eliminate the highly reactive and variable stimulation of respiration by trauma in the thoracic zone in which the opening, closure and retraction occur, and to limit the study to the effect of reflex stimulation of respiration from trauma in the lumbosacral autonomic zone, which is the neurologic zone involved in a hysterectomy. In the hysterectomies done under Pentothal anesthesia without field block of the pelvis, the average rate of utilization of Pentothal during the hysterectomy per se was 0.006 gm. a minute. In the hysterectomies done under Pentothal anesthesia supplemented by procaine field block of the pelvis the rate of utilization of Pentothal was 0.003 gm. a minute. This represents a reduction of 50 per cent in the need for Pentothal as a result of the peripheral blockage of all pain impulses initiated by trauma in the pelvis from impinging on the respiratory center. This result parallels the reported reduction of 50 per cent in the need of Pentothal effected by local procaine field block in cholecystectomy (anterior splanchnic block) and in radical mastectomy (intercostal block). The low rate of utilization in the mildly reactive lumbosacral segment (0.006 gm. a minute) for hysterectomy stands in the striking ratio of 1:4 when compared with the calculated rate of utilization (0.024 gm. a minute) in the highly reactive field of the thoracic segment for cholecystectomy. The minimal intensity of the stimulating impulses arising in the lumbosacral autonomic area is further emphasized by the fact that only 14 per cent of the total amount of Pentothal sodium administered for the entire surgical episode was given during the period of hysterectomy proper, whereas the remaining 76 per cent was required for induction, opening and closing of the

incision (thoracic segment). These indirect quantitative measurements of the segmental differences of intensity of the stimulating impulses that reflexly activate respiration only serve to verify the appended observations on the intensity of segmental reflexes recorded by the pneumograph.

Pneumographic studies carried out in the operating room during the course of these studies have demonstrated the specific character of the respiratory response to pain impulses initiated by trauma in the area of distribution of the nerves from the several neurologic segments of the body (cranial, cervical, thoracic, lumbar and sacral). In the cervical segment there is negligible reflex stimulation

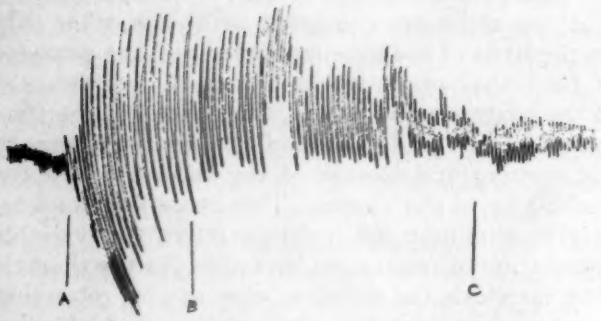

FIGURE 1. *Thoracic Somatic Reflex.*

This graph demonstrates the normal respiratory curve under Pentothal to point A, at which the incision is started. A to B shows the sharp reflex stimulation of respiration with an accentuated and prolonged expiratory phase (upstroke of pen) by pain impulses from incision. The abdominal muscles vigorously contract during expiration, causing muscular rigidity and disturbed abdominal relaxation. Control of reflex stimulation (B to C) with Pentothal is effected by suppressing the expiratory neurons and inactivating (not paralyzing) the abdominal muscles. This restores abdominal relaxation. From C easy, adequate respiration with a quiet abdomen prevails.

of the inspiratory side of respiration in the somatic plane; there is practically no stimulation of respiration in the visceral plane (thyroidectomy). In the thoracic zone (the base of the neck to the symphysis pubis) there is an intense reflex stimulation of the expiratory side of respiration by trauma, both in the somatic and in the visceral plane. This response far exceeds that noted in any other segment of the body. Its importance lies in the fact that stimulated respiration in this segment activates the abdominal muscles in the role of accessory expiratory muscles of respiration, their activity being identical with that which occurs during the forced expiration of heavy exertion or dyspnea. This activity disturbs abdominal relaxation and limits access to the operative fields. In the thoracic visceral zone the reflex muscular response may be of such magnitude in light planes of Pentothal anesthesia as to precipitate an expiratory arrest of respiration during the period of traumatic stimulation, leading to increased production of carbon dioxide from muscular contraction and to deficient oxygen intake, both of which may contribute to transient cyanosis. Such anoxia is due not to the action of the drug per se but to prolonged expiratory muscular response to trauma in a too light plane of Pentothal anesthesia.

A pneumographic recording made while the skin of the lower abdomen (thoracic segment) was being incised showed that, after a period of a quiet, unstimulated run, the trauma of an incision evokes a sharp respiratory response chiefly on the side of expiration (Fig. 1). This stimulation of respiration, which activates the abdominal muscles to prolonged and forceful contractile efforts, requires significant amounts of Pentothal to control the stimulated respiratory center and to restore the abdominal muscles to an inactive state at which abdominal relaxation again prevails. Of importance during pelvic surgery is the fact that a similar activation of respiration in the visceral thoracic region may be elicited by compressing the viscera upward against the diaphragm. This compression reflex (Fig. 2) manifests itself on the pneumograph by an abrupt shift of the thorax to the position of extreme inspiration as indicated by an abrupt downward shift in the level of the curve. Superimposed on this

FIGURE 2. *Thoracic Compression (Visceral) Reflex.*

The first segment of the chart shows normal respiration with the abdomen opened. The next depressed level of the curve is due to compression of the viscera and fatty mesenteries upward against the diaphragm in obese patients. This opens the thorax to the position of extreme inspiration (downstroke of pen). Sharp, irregular, forced expirations press the viscera downward toward the pelvis. The final high portion of the curve (needle elevated) shows the undesirable degree of depression of respiration with Pentothal necessary to control this forceful reflex in extremely obese patients, abdominal relaxation being restored.

lowered curve are jerky, irregular respiratory efforts. These efforts, which are due to reflex activation of the abdominal muscles as accessory expiratory muscles of respiration, cause expiratory protrusion of the retracted viscera into the pelvis. The compression reflex is activated in the presence of extreme obesity by pressure of the viscera against the diaphragm. It may be one of the most powerful and persistent reflexes in the body, requiring such undesirably large quantities of Pentothal to suppress it as to make the supplemental use of some other agent, such as cyclopropane, or ether, desirable. This compression reflex is not activated in the average pelvic case in nonobese patients.

The reflex activation of respiration in the lumbar visceral zone (autonomic) consists of a minimal increase in the amplitude and rate of respiration. There is no activation of the abdominal accessory muscles of expiration, so that abdominal relaxation is not disturbed. The character of the response is shown in Figure 3, which demonstrates that, after a brief quiet run without trauma, crushing and pulling of the presacral lumbar nerves (superior hypogastric plexus) causes a definite but slight increase in the amplitude and rate of respiration. Procaine injection above the level of trauma in the region of the lumbar plexus obliterates first the stimulus to the rate of respiration and secondly the stimulus to the amplitude of respiration. This minimal respiratory response to trauma in the lumbar autonomic zone increases the need for additional Pentothal administration very little if any.

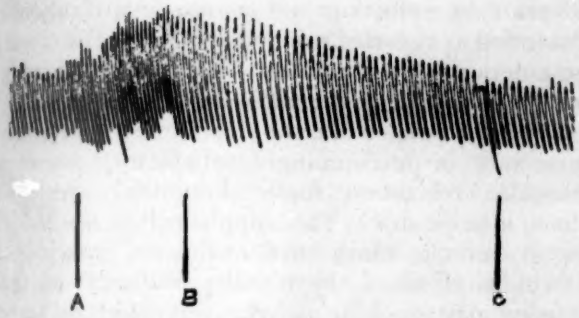

FIGURE 3. *Lumbar Visceral Reflex.*

The chart illustrates a normal unstimulated run up to point A. *Between* A *and* B *an increase in rate and amplitude from traction and squeezing of the presacral nerve plexus (superior hypogastric) occurs. At point* B *procaine injection above the point of trauma causes an immediate reduction in the rate and a gradual reduction in the amplitude of respiration. At point* C, *after the proximal end of the plexus has been severed, a fixed slower rate and a reduced amplitude are established.*

Trauma in the area of distribution of the sacral autonomic nerves elicits two characteristic types of respiratory response, both of which are induced by traction on the uterus, which in turn establishes tension in the uterosacral ligaments. The first type of reflex response to traction is inspiratory, and the second is expiratory. The two types of response do not occur simultaneously in the same patient. There is but a momentary response to each movement of traction, in contrast to the prolonged, repetitive types of response to trauma in the other neurologic zones. Figure 4 demonstrates the first type of inspiratory response to traction. Each movement of traction on the uterus — even after all attachments above the cervix have been severed and the vaginal cuff has been completely detached from the cervix anteriorly and laterally so that only the posterior uterosacral region remains intact — is followed by a single prolonged inspiratory effort accompanied by a single transient, moaning phonation due to a moderate transient laryngospasm. Deep injection of procaine solution in the immediate vicinity of the inferior hypogastric plexus (sacral autonomic) completely obliterates this response to

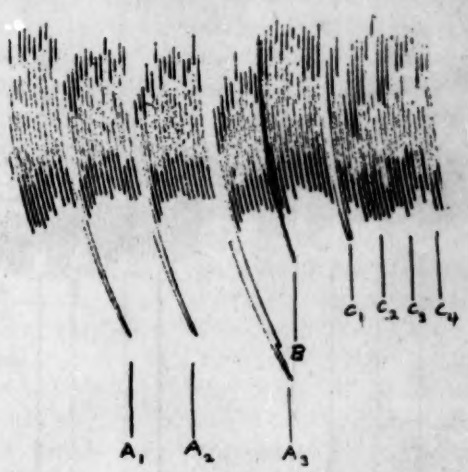

FIGURE 4. *Sacral Visceral (Inspiratory) Reflex.*

Individual tractions on the uterosacral ligaments at points A_1, A_2 *and* A_3 *evoke single, prolonged inspiratory responses, associated with reflex moaning laryngeal phonation. At point* B *(kymograph stopped) a deep presacral injection of procaine (inferior hypogastric plexus) has been made. Subsequently, a single minimal response occurs with traction at point* C_1 *from incomplete procainization, whereas traction at points* C_2, C_3 *and* C_4 *shows complete elimination of all inspiratory responses and laryngeal phonation after complete procainization. This reflex is mediated via the sacral autonomic nerves in the uterosacral ligaments. Abdominal relaxation is not disturbed by this reflex, since the abdominal muscles are not activated during expiration.*

traction. In some cases it was noted that this unique response was elicited only when the tractile effort coincided with the peak of expiration; it did not occur when the traction coincided with the peak of inspiration. In the second type of expiratory response to traction there are brief episodes of expiratory response occurring coincidentally with traction on the uterus (Fig. 5). The response does not outlast the tractile effort and persists for only one to three respiratory cycles. The response could be elicited whether the tractile effort coincided with the peak of inspiration or the peak of expiration. This expiratory response is also obliterated by deep sacral procaine block of the inferior hypogastric plexus, indicating as in the first type of response that it is a reflex mediated through the sacral autonomic plexus of nerves. Furthermore, both types of reflex response were obliterated by procaine infiltration of the uterosacral ligaments, demonstrating that the afferent nerve fibers that conduct activating pain impulses into the sacral plexus traverse these anatomic structures. These sacral reflexes may be a factor in pelvic and low-back pain when the uterosacral ligaments are involved by conditions such as

pelvic inflammatory disease and endometriosis. In the first type of inspiratory response to traction there is no activation of the abdominal expiratory muscles and hence no disturbance of abdominal relaxation. There is consequently no need for increased quantities of Pentothal. In the second type of expiratory response there is a brief tensing of the accessory expiratory muscles of the abdomen with each traction, which in turn causes a slight momentary protrusion of the retracted viscera downward toward the pelvis. This reflex leads to a moderate increase in the rate of administration of Pentothal for its control. However, in both types of response the minimal character of the activation of respiration by surgical trauma in the sacral autonomic as well as in the lumbar region is demonstrated qualitatively by the pneumograph and bears out the quantitative observations.

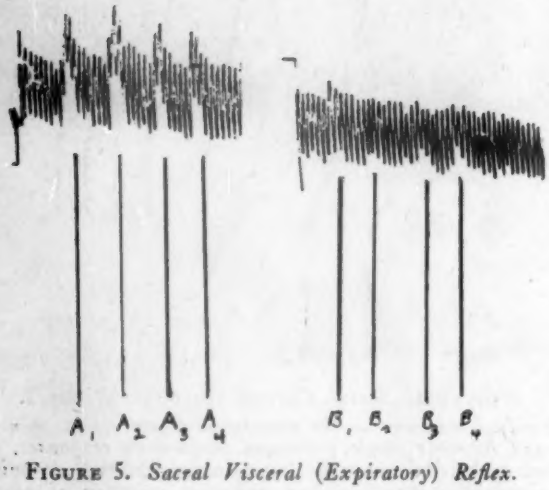

FIGURE 5. *Sacral Visceral (Expiratory) Reflex.*

At the successive points of elevation of the curves A_1, A_2, A_3 *and* A_4, *which coincided with traction on the uterus, there was moderate tensing of the abdominal muscles during expiration for one to three respiratory cycles. Even though the traction continued, the stimulus disappeared, and the curve returned to its initial level. This slight tensing of the abdominal muscles caused a transient downward crowding of the retracted viscera toward the pelvis. As demonstrated in the second portion of the curve, this reflex is also obliterated by procainization of either the uterosacral ligaments or the sacral plexus (inferior hypogastric). Traction at* B_1, B_2, B_3 *and* B_4 *shows no significant expiratory response. There is never any laryngeal phonation with this expiratory reflex, which is mostly tonic in character.*

SUMMARY

A report on the use of combined intravenous Pentothal sodium and local nerve block as a method of anesthesia in gynecologic surgery is presented. The safety of the method is attested by the fact that the over-all mortality for the entire group was 0.4 of 1 per cent and that for the major gynecologic procedures was 0.7 of 1 per cent, with no relation between mortality and anesthesia.

Two parallel groups of hysterectomies were done, the first without and the second with procaine field block of the pelvis. There was a 50 per cent reduction in the rate of utilization of Pentothal from 0.006 gm. a minute without field block to 0.003 a minute with the field block. This parallels the 50 per cent reduction in the rate of utilization of Pentothal as reported previously in cholecystectomy by anterior splanchnic block and in radical mastectomy by intercostal nerve block.

The major importance of a previously experienced pregnancy in determining a satisfactory degree of muscular relaxation under Pentothal anesthesia alone is indicated. The supplemental method of rectus muscle block with procaine provides a flaccid paralysis of the muscles routinely, so that surgery may be done in relatively light planes of Pentothal anesthesia that are wholly free from respiratory depression.

Pneumographic tracings demonstrating the characteristic patterns of reflex response of respiration to trauma in the three neurologic fields involved by surgical trauma during pelvic surgery (thoracic, lumbar and sacral) are presented.

390 Main Street

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BRONCHIECTASIS: TREATMENT AND PREVENTION*

THEODORE L. BADGER, M.D.†

BOSTON

BRONCHIECTASIS is protean in its expressions as it is sometimes obscure in its origin. The clinical picture varies in individual patients, but common to the severer cases is a history of harassing, recurrent pulmonary infection, head colds or sinusitis that "goes down into the chest," to remain for weeks with a productive cough, or one of recurrent hemoptyses or repeated attacks of pneumonia. As a rule, severe pulmonary infections date the onset of the symptoms of bronchiectasis. With great clarity patients recall childhood and adult pneumonias, measles and whooping cough, influenza and "croup" as the beginning of the pulmonary trouble. In many cases each succeeding reinfection aggravates the symptoms. Patients with extensive disease may be seriously toxic with fever, abundant sputum, often foul smelling, a poor appetite, inability to gain weight and physical weakness. Psychologically, some of them are problems of adaptation to a life of severe invalidism in a society in which their presence may be offensive because of cough and the bad odor of their secretions. If surgery is unsuitable for them, they become a difficult problem in medical care. It is said that bronchiectasis acquired in infancy (before the age of two) is a highly fatal disease, and Anspach[1] states that *all* infants die who develop it in their first year of life. Few untreated patients who acquire bronchiectasis before the age of ten live past the age of forty.[2] But when the disease is acquired after thirty years of age, patients live on, often without the increasing disabilities of emphysema, fibrosis and cough that may accompany chronic pulmonary infections in advancing years. It is true that bronchiectasis is the commonest cause of nontuberculous pulmonary hemorrhage in all ages,[3] as well as the most frequent cause of hemorrhage up to the age of twenty.[4] And it is known that bronchiectasis may be simply the acute clinical condition that masks an underlying bronchogenic carcinoma or pulmonary tuberculosis.

This grim picture accounts for much of the aura of pessimism surrounding the medical treatment of bronchiectasis. But this point of view is not entirely justified in reviewing the natural history of this disease. For bronchiectasis may exist with few or no symptoms for many years, and long periods of well-being may be interrupted only by sporadic episodes of bronchitis. The individual constitutional factor of high resistance to infection must be recognized as important in these cases, just as Perry and King[2] showed that 38 per cent of their nonsurgical patients had an "excellent living and working capacity." It should be clear that there is no stereotyped relation between the pathologic extent of bronchial dilatations and the severity of clinical symptoms. Some patients with extensive bilateral disease live normal lives with minor limitations of cough and sputum; others with so-called "dry bronchiectasis" may have recurrent hemoptyses or pulmonary hemorrhages, and fetid sputum may accompany relatively little unilobular disease. Such is the experience in the clinic at the Boston City Hospital and in private practice. This knowledge of the satisfactory progress of many cases is not entirely understood, but it is stressed to obviate the prevailing pessimism that surrounds medical care, as well as to present a fuller understanding of the long course of bronchiectasis and to substantiate a better prognosis. In the past there has been too great a tendency to group the medically treated case with the wholly untreated case of bronchiectasis into an unsatisfactory nonsurgical or so-called "medical result." The results of a surgical "cure" may be extraordinarily good, but the benefits of medical care should not be overlooked.

It is of great interest that in the Massachusetts General Hospital series of 400 cases, 59 per cent were unsuitable for surgery for one reason or another.[2] Alexander[5] also points out that in any large number of patients with bronchiectasis 50 per cent should not have excision surgery. The patients not suitable for surgery are those with too much or too little bronchiectasis, those with limited cardiovascular reserve, those with limited pulmonary reserve because of associated emphysema, those with concurrent disease and those who will not submit to surgery. Furthermore, asymptomatic bronchiectasis does not require excision.[6] Perry and King[2] also observe that when surgery has been done, follow-up studies indicate that approximately a third of patients operated on still are in poor or only fair condition; in other words, a third of the operated cases subsequently need medical treatment. In these cases residual disease remains with chronic cough, sputum and often hemoptysis that is not suitable for further surgery. Thus, it appears that about two thirds of all cases of bronchiectasis, with or without surgery, require medical supervision and care.

It is because this large number of patients will always need medical treatment that the following considerations are presented. Although the medical

*Part of a symposium on bronchiectasis presented at the annual meeting of the Massachusetts Medical Society, Boston, May 21, 1947.

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course may be a difficult, painstaking supervision of details in daily living, a simple practical routine may suffice to maintain excellent health.

Medical Care

The medical management of bronchiectasis is directed toward: mechanical drainage; the control of infection; measures to improve the general health

Figure 1. *Position of Election for Dependent Vertical Postural Drainage in Basal Bronchiectasis.*

of the patient; and (as important as any factor) the prevention of the condition before it occurs.

Mechanical Drainage

The Jacksons[7] compare the putrefaction that gives rise to the foul odor of severe bronchiectasis to the septic tank. Early purulent exudate is often too thick and viscous for expulsion. But with stagnation and bacterial action liquefaction permits expulsion. Medical treatment is aimed at hastening this technic of nature.

Postural drainage thus becomes the most important single mechanical procedure for emptying dependent bronchiectatic cavities of their secretions. The emptying should be as complete as possible and sufficiently frequent to prevent any amount of reaccumulation. It is a treatment that must be carefully studied with each patient. Four details are essential to its proper execution.

The first is position, for postural drainage can best be carried out from a high bed or table with complete vertical dependence of the trunk, with both hands on the floor and with a basin conveniently placed for expectoration (Fig. 1). Clumsiness and occasionally weakness and dizziness may accompany the first efforts at treatment, but patients soon accommodate themselves to its use so effectively that it becomes routine. For older patients and obese and dyspneic persons for whom this procedure is too difficult, it may be arranged by the use of a hinged leaf to a table. Alexander[5] showed that patients at work who could not find a convenient bed or table for postural drainage could, in the seclusion of a lavatory, substitute the grotesque and somewhat humorous position of flexion at the waist, with the knees slightly bent, the head far down, the buttocks as high as possible and the hands grasped behind the knees (Fig. 2). This provides a fairly effective substitute form of postural drainage. Secondly, for the best results in postural drainage, the thinning of stagnant secretions becomes essential for their mechanical removal. Many shotgun expectorants are available, but the most effective are iodides, ordinary steam inhalations, ammonium chloride and creosote. Depressants with

Figure 2. *Substitute Position for Drainage of Basal Bronchiectasis When a High Table or Bed Is Not Available, As When at Work.*

morphine derivatives should be avoided if possible, since they become habit forming in the chronic course of the disease and reduce expulsion of secretions, facilitating retention in the lung. Thirdly, bronchodilators such as adrenalin, ephedrine, Aminophylline and mucosal vasoconstrictors like Neo-Synephrine inhaled judiciously through a nebulizer with oxygen under pressure, or by a hand-bulb method, may greatly facilitate the loosening of secretions for postural drainage. And fourthly, deep expiratory and very deep inspiratory breathing before and during postural drainage may help the emptying of deep secretions. The frequency of performing postural drainage is a matter of individual trial and error. The timetable may be every two hours, or once a day, but should be often enough to keep the sacculations as free as possible from secretions. There may be long periods when drainage is unnecessary. Constant drainage cannot be carried out. Lying on the opposite side with some elevation of the foot of the bed is in no way as

effective as the vertical dependent position. Many patients, however, who produce nothing while in this position raise abundant quantities of sputum immediately on sitting upright.

An example of the value of regularity in postural drainage is provided by the case of a fifty-seven-year-old man, who was followed sporadically for ten years in the Thoracic Clinic of the Boston City Hospital for bilateral basal saccular and cylindrical bronchiectasis. He returned not long ago for check-up on a recent pneumonia controlled easily with penicillin. He was well and strong, looked ten years younger than his age and had only a morning cough and expectoration. In 1937 this man had first been seen in the Thoracic Clinic for severe recurrent hemoptyses of 30 to 180 cc. of red blood off and on for two years, with cough and productive sputum. So extensive was the bronchiectasis in both lower lobes that bilateral lobectomy was advised, but refused. Consequently, the patient was schooled in the art of postural drainage and advised to use it every two hours. In time, it became unnecessary to go into position often, and for several years, with unfailing regularity, he has carried out the postural drainage once daily. Each morning he raises not more than 5 to 10 cc. of thin mucopurulent material, rarely coughing again until the next day's postural drainage. The patient states that he has lived and worked without interruption because of illness.

Bronchoscopy remains an important procedure in the handling of bronchiectasis, and a necessary one in cases presented for surgery. Its need is for the removal of unsuspected foreign bodies and for the diagnosis of primary bronchogenic carcinoma, which is too often masked by bronchiectasis. The procedure is useful in segmental location of the disease within the lung and of value in aspiration treatment. Deep, widespread, careful aspiration of bronchiectatic lobes after shrinking of the mucosa occasionally has a place in the mechanical removal of secretions, but its regular routine use has been valueless.

Control of Infection

Chemotherapy in any form has so far provided no cure for bronchiectasis, but its judicious use in conjunction with mechanical drainage can make life bearable for many patients with severe bronchiectasis and can shorten the duration of the acute attacks of bronchitis and pneumonitis in milder cases.[8–12]

The bacteriology of bronchiectasis in its chronic phase is a composite picture of mouth organisms giving place to predominant types only during intercurrent pneumonias and infections. Both inhalation and intramuscular administration of penicillin have earned their place singly and simultaneously in the medical treatment of this disease. The purpose of inhalation is the direct application of the drug to the bronchial walls and to the secretions of the saccular dilatations. Blood levels by inhalation are much lower than those obtained by intramuscular administration. Absorption by the respiratory route alone is not adequate to take care of deep-seated pulmonary suppuration. Penicillin by inhalation should not be expected to reach deep into bronchi obstructed by thick secretions. Therefore, well executed postural drainage should precede the use of penicillin aerosol. If necessary, inhalation or injection of bronchodilators may be used with postural drainage in the first days of acute attacks.

The use of penicillin by whatever route in this chronic disease marked by exacerbations of symptoms must be considered temporary. Its value is dependent on the suppression of sensitive organisms, and its usefulness wears off in two to four weeks. The remission will last until another acute respiratory infection supervenes, unless the fundamental principles of mechanical drainage continue to be carried out regularly and with recognized effectiveness. Dependence on effectiveness of the drug without postural drainage is unwarranted.

At present, studies point toward the usefulness of sulfadiazine in daily doses of 1 gm. for many months. Segal[13] has had success with its use in long-term medical management of bacterial control in bronchiectasis, between brief periodic uses of penicillin. But in the long-term use of sulfadiazine even non-allergic patients must be guarded carefully against sensitivities. The best results with any drug will be in patients with the most sensitive organisms and in those with the best inherent constitutional resistance to respiratory infections. Studies of bacterial flora will help, especially in the difficult case.

Intercurrent infections of virus type, like the common cold, grippe, influenza and virus pneumonias, commonly excite otherwise quiescent bronchiectasis into acute exacerbations. Inhalation of penicillin or sulfadiazine at the beginning of such infections, although known to be ineffective against the virus, has in my experience been valuable in preventing secondary invaders and serious reactivation of existing bronchiectasis.

Sinusitis has a varied influence on the symptomatic course of bronchiectasis. Goodale[14] has shown that there is a high incidence of sinusitis in the late years of bronchiectasis, and the more extensive the bronchiectasis, the more severe the sinus disease. Once sinusitis is acquired he believes that damage to the lungs is increased. At the same time, however, he points out that these patients are more susceptible to respiratory infections. This concept is entirely logical, for spread of sinus infection by the bronchial route is direct, and spread by lymphatic drainage is by the right side of the heart to the lungs. Sinusitis has been quite thoroughly exonerated as an etiologic factor in bronchiectasis. The influence of sinusitis on bronchiectasis and vice versa is often seen by the clearing of infection in either one followed by beneficial effects

upon the other. But sinus disease is closely linked to individual susceptibility to infection, and conservative care of sinusitis with chemotherapy deserves a trial. So too with the mouth; all infections of the teeth and gums need meticulous care.

Improvement of General Health and Hygiene

Patients with bronchiectasis must learn to live with their disease and to make the adjustments that are essential to their well-being. Like the patient with valvular heart disease who must avoid competitive sports and severe exertion, the patient with bronchiectasis must protect himself against respiratory infections and take good care of those that come his way. Good nutrition is important in the control of any chronic infection. Its specificity, however, is hard to define except in the maintenance of normal body weight by a diet high in protein and vitamins in this disease in which nitrogen catabolism is elevated by chronic infection. The prevention of anemias in the presence of infection deserves serious attention. A life well regulated with rest and exercise should be so ordered as to avoid any lasting fatigue. Smoking may aggravate a respiratory mucosa already inflamed with basal infection, especially in patients sensitive to nicotine. Avoidance of exposure to cold and wet and sleeping in warm fresh air, rather than freezing cold drafty rooms, are of value to those who are sensitive to acute respiratory diseases. Change of climate to higher inland areas well away from the Eastern seaboard may contribute to the well-being of patients with more serious disease. These details — each one in itself, perhaps, unimportant — all contribute to build up the general health, which chronic infection tends to break down.

Prevention

Knowledge of the cause and pathogenesis of bronchiectasis has contributed greatly to understanding of its clinical picture. The part played by atelectasis and infection from whatever cause should lay the pattern for prevention. It has been shown that 65 per cent of all cases develop in the first two decades of life[2] and that bronchiectasis is the leading cause of hemoptysis and pulmonary hemorrhage in that age period.[3, 4] Thus, two thirds of the problem of prevention is in the hands of those physicians who care for children. Lobar and lobular atelectases lay the foundation for the development of bronchial dilatations.[1, 15–20] Thick tenacious mucus, in the form of obstructing bronchial plugs, has been shown by Clerf[21, 22] to produce the clinical and x-ray signs of collapsed lobes. But infection without atelectasis may also cause bronchial dilatation by its destruction of the bronchial wall.[23] Probably, both atelectasis and infection conjointly are responsible etiologic factors.

Prevention thus takes two major directions. The first is early diagnosis of bacterial pneumonias, with adequate chemotherapy. The second is re-expansion of atelectases that persist after pneumonias and acute respiratory infections, especially in children.

The unresolved pneumonias, the continued or recurrent coughs with low-grade fever and the lasting physical signs that follow acute respiratory disease may mask or may be the signs of remaining atelectasis of small bronchioles or lobules of the lung. Massive collapse is not necessarily present, and it is the smaller pulmonary segments that are revealed only by x-ray study when the acute disease is over. But for more practical purposes, deep-breathing exercises of the affected side — forced expansion of the chest hourly against the pressure of a hand placed over the pneumonic area — may be begun immediately after the acute phase has subsided. This method, described by Harkin[24] and used in conjunction with expectorants and postural drainage, may be sufficient to expel obstructing bronchial plugs and re-expand residual atelectases. X-ray evidence of definite collapse that does not clear with these simple measures indicates the need for bronchoscopy for aspiration of the mucous plug.

A further step in the field of prevention of bronchiectasis is the prompt removal of aspirated foreign bodies and of benign endobronchial tumors before permanent bronchial damage has occurred. The early diagnosis of lung abscess, with active chemotherapy and early surgery if necessary, should prevent the bronchiectasis that commonly follows it.

Conclusions

A prophecy for significant reduction in the incidence of bronchiectasis in the future lies in the experience that the prevention of bronchiectasis will naturally follow the present-day treatment of pneumonias and respiratory infections of bacterial origin, especially in childhood. The medical treatment discussed above is not offered as a substitute for the case of bronchiectasis uniquely suited for excision surgery. It is offered for patients who already have the disease and are not suitable for operation or refuse it. The natural history of bronchiectasis is so varied in its course that the following factors are needed: a careful medical and surgical evaluation in each case; a period of observation when the details of mechanical drainage are studied; a time when the bacteriology and effects of chemotherapy on its control are observed; and a place where the general health and hygiene of the patient are reviewed and measures of prevention against common respiratory diseases are instituted. But especially is there need to weigh the unknown factors of constitutional resistance or susceptibility to respiratory infection when the prognosis of bronchiectasis is evaluated in each case.

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ESOPHAGEAL STRICTURE FOLLOWING AGRANULOCYTOSIS DUE TO SULFONAMIDE THERAPY

Report of a Case

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SULFONAMIDE therapy carries with it the threat of depression of the centers of blood formation and agranulocytosis and thus of agranulocytic angina. Should the process that sets up this angina extend to the esophagus, acute esophagitis results. The patient may survive the acute phases of the disease, only to face marked esophageal stenosis as a result of secondary cicatricial scarring. Investigation of the literature has revealed no reports similar to the following case of esophageal stricture resulting from agranulocytosis caused by sulfonamide therapy.

In November, 1945, a 38-year-old woman was admitted to the hospital with a peritonsillar abscess.

The past history included numerous attacks of cholecystitis and renal-tract infection. Sulfadiazine had been prescribed, except during the last attack, which immediately preceded the present illness and for which she had been treated at a Boston clinic with sulfathiazole.

The present illness had begun 8 days previously with a sore throat. A physician prescribed 1 gm. of sulfadiazine every 3 hours. This regime was continued until admission. However, in spite of this therapy, the patient became rapidly worse.

On admission, a peritonsillar abscess was found and opened. Pus exuded from the wound. Ulcerations on the buccal mucosa gradually became fulminating, and spread to the lips. The white-cell count was only 1200, all of which appeared to be lymphocytes; no young forms were found. To complicate the situation further, the blood was Rh —.

The temperature rose from 102 on admission to 105°F. on the second day, and then spiked between 102 and 105°F. until the 7th and 8th hospital days, when it rose to 106°F.

Sulfadiazine was stopped on admission, and 30,000 units of penicillin intramuscularly every 3 hours was started. The patient was supported with intravenous fluids and transfusions of compatible blood. However, her condition grew steadily worse during the first 8 days. The pulse went from 120 to 140 per minute and then to 160 per minute for short periods. The quality became poor. The patient became irrational. Rales appeared in the chest, and it was necessary to suction the upper air passages to keep them clear.

Dr. William P. Murphy, of Boston, who saw the patient in consultation, expressed the opinion that the agranulocytosis was due to the sulfonamides previously administered and that the present therapy, which included liver extract, was correct. He was encouraged by the blood smear on the 9th day, which showed a white-cell count of 3000, with young forms indicating bone-marrow activity.

FIGURE 1. *Roentgenogram Showing Esophageal Stenosis on May 4, 1946, before Passage of a Bougie.*

By the 11th day, there was slight improvement, and after the 14th day, rapid clinical recovery. During the last days of

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the hospital stay a soft diet caused pain on swallowing, but at discharge on the 36th hospital day the pain had gone, although slight difficulty in swallowing remained.

At home, the patient at first gained weight and by chewing her food thoroughly swallowed without too much difficulty.

FIGURE 2. *Roentgenogram Showing Esophageal Stenosis on September 12, 1946, after Passage of a No. 32 Fr. Bougie.*

However, the dysphagia progressed until May, 1946, when she could swallow only fluids or thin gruels. She had lost 10 pounds during the previous 2 months.

A barium study revealed a normal esophagus down to the level of the carina. From that point, the esophagus showed a long, funnel-like narrowing, where the lumen was gradually reduced to 5 mm.; thin barium flowed fairly readily through the involved segment, but thick barium paste met almost complete obstruction (Fig. 1).

A size 9-54 Jackson esophagoscope was passed to the level of the carina, above which the lumen and mucosa appeared normal. At this point, the lumen narrowed markedly, and the mucosa was pale and lusterless. The esophagoscope was withdrawn and No. 14 and 16 Fr. filiform bougies were slowly passed. Moderate resistance was met.

The patient subsequently noticed slight improvement in ability to swallow. She was discharged and has returned at intervals of 2 and 3 weeks for bouginage. The size of the bougie has been slowly increased until a No. 34 Fr. is now used. She has gained weight and feels well. However, after 2 or 3 weeks, increasing dysphagia slowly returns. Furthermore, bougies larger than a No. 34 Fr. meet with marked resistance. Figure 2 demonstrates esophageal stenosis after passage of a No. 32 Fr. bougie.

Dr. Richard H. Sweet, of Boston, who examined the esophageal x-ray films, stated that after further study this patient might be a good candidate for transthoracic esophagectomy.*

SUMMARY

A case of marked esophageal stenosis following agranulocytosis due to sulfonamide therapy is reported.

It is assumed that the same ulcerative process that caused the severe angina of the mouth caused ulcers in the esophagus and that, after the acute esophagitis had resolved, secondary cicatricial stenosis took place.

Had the nature of the process taking place in the esophagus been appreciated sooner, bouginage at an earlier date might have prevented the resulting stenosis.

A search of the literature has failed to reveal a similar case.

151 Rock Street

*Since this paper was submitted for publication, Dr. Sweet has successfully performed a transthoracic esophagectomy. The patient now swallows without difficulty. Because of the new elevated position of the stomach large meals cause mild dyspnea, but if small meals are eaten more frequently, no distress is encountered.

THE DOCTOR AND VOCATIONAL REHABILITATION FOR CIVILIANS IN MASSACHUSETTS

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BOSTON

AN OPPORTUNITY for members of the medical profession to take part in the vocational rehabilitation of handicapped civilians is presented to the private practitioner and specialist through a program administered by each state in partnership with the federal government. Recently, a pamphlet entitled *The Doctor and Vocational Rehabilitation for Civilians* was sent to all members of the American Medical Association, with a copy of a letter from Henry H. Kessler, M.D., consultant to the Office of Vocational Rehabilitation, Federal Security Agency, to inform every physician of the new services available for the assistance of handicapped patients. The Division of Vocational Rehabilitation of the Department of Education is the agency in Massachusetts by which this program is administered for the restoration of the earning capacity of the handicapped to enable them to earn their livelihood in competition with the able-bodied. The achievement of this goal for disabled civilians, who outnumber those disabled in war, rests primarily in the hands of the physicians, who are the logical case finders as well as the final purveyors of the necessary medical treatment.

Vocational Rehabilitation was established by the National Rehabilitation Act in 1920, when Congress granted financial aid to the States for disabled civilians. It was established as a public service in the same sense as the school systems, health departments and public libraries to extend vocational training to the physically handicapped. It was not until Public Law 113 was passed by Congress in 1943, amending the National Rehabilitation Act, that medical care could be provided to alleviate a condition, either physical or mental, that constitutes a vocational handicap.

To be eligible for the services of the Division of Vocational Rehabilitation, an applicant must be a resident of Massachusetts and of legal employable age (sixteen years) and must have a physical or mental disability that prevents him from obtaining employment. Any patient whom the physician regards as eligible can be referred to the Division for consideration. A report of the physician's findings and recommendations should accompany the referral.

Successful rehabilitation, which may be a long and complex process, requires the integration of professional skills at every stage. To aid him in working with the patient as a person, the physician needs a team of skilled workers, including the nurse, medical social worker and occupational and physical therapists, as well as the vocational counselor of the Division, who knows the employment field and the facilities for training for suitable occupations for the handicapped patient. Rehabilitation should begin at the point of diagnosis, when the extent of disability may be estimated and plans formulated for the eventual return of the patient to economic usefulness. To attain this goal, each person should be evaluated from a medical, psychologic and emotional standpoint prior to selecting a vocational objective, since many factors need to be considered in helping a handicapped person select a suitable employment objective.

It is the policy of this program to compensate physicians, clinics and hospitals of the patient's choice for their care of the patient in the same manner in which it compensates the schools and colleges for tuition. A professional advisory committee, which is composed of several physicians, including a member appointed by the Massachusetts Medical Society, and members of allied professions have been appointed to advise the Division concerning physical-restoration policies and procedures. The chairman of the Committee on Rehabilitation of the Massachusetts Medical Society is the member representing the Society on the advisory committee. The professional advisory committee has approved the State plan for providing medical care and a fee schedule prepared by the Committee on Rehabilitation of the Massachusetts Medical Society. The fee schedule approximates Blue Shield fees and is in conformity with fees paid by the federal Bureau of Employees Compensation and the Massachusetts Departments of Public Health and Industrial Accidents. The fee schedule submitted by the Committee on Rehabilitation of the Massachusetts Medical Society was published in the *Journal* in the issue of December 20, 1945. This fee schedule has been approved, in condensed form, by the federal Office of Vocational Rehabilitation. Upon request, the division will gladly supply any physician with detailed information about the schedule.

Applications for vocational rehabilitation for eligible persons should be made to any office of the Division of Rehabilitation as soon as possible after the onset of the disability. Application may be made in person or by mail and by the handicapped person himself or in his behalf by a physician, hospital, social worker, employer, insurance company, fraternal or labor organization, friend or relative or

*Director, Division of Vocational Rehabilitation, Massachusetts Department of Education.

by any interested citizen or agency. It is not necessary to use any special form or blank.

The Commonwealth is divided into districts, and a vocational counselor is assigned to a group of communities for work with applicants residing there. The administrative office is located in the Education Building, 200 Newbury Street, Boston, where the Chief Medical Consultant is available on a part-time basis for advice on physical-restoration policies and procedures and for decisions on cases to be accepted for medical and surgical treatment. District offices are located in Boston, Springfield and Lowell, with branch offices in New Bedford, Worcester and Pittsfield. Medical consultants who are attached to each district office review the medical material on each applicant, discuss his limitations for employment with the vocational counselor and decide whether the mental or physical disability is a substantial employment handicap from a medical standpoint. Further diagnostic procedures are recommended by the consultants, when indicated, for which the Division may be financially responsible without investigation of the economic need of the applicant. However, when treatment is advised, financial need for these services must be established.

An applicant may select his family physician — or any physician licensed to practice medicine in Massachusetts — for the general medical examination, which is required for all applicants. This may be paid for by the Division, according to the fee schedule. A serologic test and a urinalysis are essential parts of this examination, which is designed to give full information concerning the person's general physical condition as well as the specific disability for which he is being referred. The opinion of the doctor regarding the occupational limitations is especially important. The report form has recently been revised by the medical consultants to the federal agency and has been simplified as much as possible to save the doctor's time and still include the information necessary. If the general medical examination indicates the need of a specialist's examination, the physician is asked to recommend such a procedure, and the medical consultant of the Division will authorize an examination by a qualified specialist selected by the applicant and the physician.

Every person accepted for vocational rehabilitation by the Division receives counseling and guidance. He may receive vocational training or education in schools, on the job, by correspondence or by tutor or service for placement in the right job. All these services may be given without determination of economic need.

It is necessary, however, to determine economic need for the following services, if they are required to prepare for employment: surgical and medical treatment and psychotherapy; hospitalization, not to exceed ninety days; specialist treatment in any field; prosthetic appliances, including artificial limbs and hearing aids; physical and occupational therapy; dental treatment; and nursing services, drugs and supplies. Instructional and training supplies, transportation and maintenance if required during rehabilitation are included.

In determining financial need, the Division recognizes that an applicant may have sufficient income to meet all ordinary living expenses but may lack a surplus to meet the cost of medical care. The program of physical-restoration services is designed to help the medically indigent, who often postpone surgery and medical care, necessary as part of a rehabilitation plan, because they are unable to pay for the service.

Eligibility for physical restoration further requires that the disability must be static, in the terms of Public Law 113. This has been interpreted to mean a disease that is relatively stable, slowly progressive or chronic but amenable to treatment. Care for acute illness may not be furnished, and this program cannot be construed to mean a general medical-care program.

The cost of rehabilitation for employment is readily justified as an actual economic gain, as shown by reports issued by the Division of Vocational Rehabilitation and the federal office. The expenses of rehabilitation are nonrecurring expenditures, whereas public assistance to a handicapped person may be a constant expense for years. Statistics show that at the time of application for rehabilitation, about a third of the applicants were not supporting themselves. Most had never worked, and rehabilitation services enabled many who were working to be more advantageously employed.

Rehabilitation through the Division can be made more effective by the collective action and assistance of individuals and organizations. Close co-operation is maintained with physicians, hospitals, schools for the handicapped as well as public and private schools, social agencies and all state departments concerned with the health and welfare of the residents of Massachusetts. The co-operation of individuals or organizations to develop employment opportunities for the handicapped is especially welcome. Teamwork is necessary in working out the details of a rehabilitation program, and most important of all for its success is the co-operation of the handicapped person himself.

The practicing physician's judgment of the physical condition of the client is the basis on which the rehabilitation plan is built. There is no substitute for this, and the support and approval of Massachusetts physicians is needed by the Division of Vocational Rehabilitation, not only in the carrying out of the rehabilitation services but also in the finding of disabled persons who may benefit by this program. A pamphlet outlining the services available may be obtained on application to any of the offices of the Division.

MEDICAL PROGRESS

CUTANEOUS MEDICINE (Concluded)

JOHN G. DOWNING, M.D.*

BOSTON

INFECTIONS

Virus

Extensive herpetic eruptions of the lips may be serious, owing to subsequent scarring causing circumoral constriction. Herpes labialis occurs in 25 to 50 per cent of cases of cerebrospinal meningitis on the fourth or fifth day of the disease. It is probably due to the ever-present virus, being activated by febrile illness.

Toward the close of the nineteenth century a complication of infantile eczema characterized by a so-called "varicelliform eruption" was first described by Kaposi[156] as an acute outbreak of numerous vesicles, partly scattered and partly arranged in groups. The vesicles are as large as lentils and are filled with clear serum, and the majority are umbilicated. The largest number of vesicles are found on already eczematous skin; smaller groups appear on previously intact skin. The patients have a high fever and are extremely restless.

A recent paper of Lane and Herold[157] has done much to make secure the position of this disease as a separate entity. Barton and Brunsting[158] also treat the condition as a separate disease. King[159] considers it a complication of atopic eczema — a conclusion reached through investigation of the herpes simplex virus. Ronchese[160] suggests the vaccinia virus as the responsible agent.

There seem to be four features that characterize the disease: an antecedent skin disease, usually atopic dermatitis[158, 159]; systemic involvement, shown by lymphadenitis, fever, malaise and edema; lentil-sized, umbilicated vesicopustules, discrete or in groups on a bright erythematous base, and limited almost exclusively to the sites of existing skin disease, which crust and break, new ones appearing for seven to ten days; and very slight scarring.

Wenner[161] has identified the herpes simplex virus in 3 cases by methods that leave no room for doubt. Blattner, Heys and Harrison[162] have proved the herpes simplex virus to be present and have grown it in eggs and mice. Barton and Brunsting[158] list the complications as stiff neck, headache, epigastric pain and incontinence of urine and feces, all of which were seen in their cases, and also hemorrhagic diarrhea, anuria, otitis media, purulent rhinitis, conjunctivitis, tetanic spasticity, corneal ulcer, gangrenous slough, abscess and suppurative nodes. The virus of herpes simplex, which may cause encephalitis, has been isolated from the glycerinated brain material in 2 cases of fatal encephalitis.[163]

Pregnancy may be complicated by various herpetic eruptions. The most serious type is herpes gestationis, which is characterized by pruritic, vesicular eruptions often mistaken for scabies. Bullous lesions may also occur, so that the eruption is often mistaken for pemphigus.

A report of 144 cases of a newly recognized rickettsial disease, so-called "rickettsialpox," in a housing development in New York merits renewed attention for its value in differential diagnosis. The agent was isolated from mites and was named *Rickettsia akari*.[164] The disease is characterized by an abrupt onset of chills, fever, sweats and backache, followed after several days by a rash. About a week prior to the onset of the fever there is an initial lesion, variously described by the patients as a pimple, boil, blind boil or insect bite. The initial lesion is a more or less round, red papule, firm to the touch. The papule enlarges and the center becomes vesiculated. Ultimately it shrinks and dries, and a black eschar forms. In the fully developed state the lesion frequently resembles certain stages of vaccinia. Regional lymph nodes are usually enlarged and sometimes slightly tender to the touch. The initial lesion persists for approximately three weeks and usually leaves a small scar. A rash appeared in all the New York cases, usually at the onset of the fever or a day or two later. In some cases it was first seen on the arms or legs; in others, it appeared on the abdomen, back, chest or face. In 2 cases lesions occurred on the mucous membranes, in 1 on the palate and in 1 on the tip of the tongue. In no case was the rash observed on the palms or soles.[165]

Interest in herpes zoster has been renewed by the suggestion of surgical section of the involved nerve or of several segments to relieve the persistent pain of post-zoster neuralgia. This is required in rare cases, but most patients respond to simpler methods of treatment.

Ceniculate zoster (the Ramsay-Hunt syndrome) with involvement of the cranial nerves is interestingly described by Tschiassny,[166] who localized the lesion by the subjective and objective findings.

A virus may be the etiologic factor in conditions such as Behcet's disease. Ten years ago Behcet

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established as a clinicopathological entity a recurrent triad of symptoms. Characteristic of this syndrome are recurrent ulcerations of the oral cavity and genitals and repeated attacks of uveitis, which in later stages is associated with hypopyon.[167–169] The eye involvement may precede, coincide with or follow the oral and genital manifestations. The ulcers of the mouth and genitals are small and discrete, either aphtha-like or nodular and necrotic. Thomas[170] describes a case that he thinks is the first to be reported in Great Britain.

Thirty-three cases of erythema bullosum malignans of the pluriorificial type occurred at the Willard Parker Hospital for Contagious Diseases between 1932 and 1946, with a mortality of 18 per cent. The most urgent feature requiring immediate and constant ophthalmologic care was the destructive lesions of the cornea and conjunctivas terminating in grave ocular sequelae — panophthalmitis and blindness. An upper respiratory onset occurred in over half the patients, and vaginal and urethral stenosis in 2 cases. The treatment is symptomatic in this disease, in which a virus is suspected as the causative factor. Penicillin administered in 2 recent cases materially aided recovery.[171]

In 1922 a "new eruptive fever associated with stomatitis and ophthalmia" was reported by Stevens and Johnson.[172] This disease is characterized by an acute, sometimes fulminating systemic reaction, with fever and prostration, erythematous generalized skin rash and severe stomatitis, followed by sloughing. With occasional exceptions[173] the conjunctivas are involved. The usual period before resolution of the skin lesions is three weeks.[174] The exact appearance of the lesions varies somewhat in different cases, and Stevens and Johnson even repudiated as inadequate the diagnosis of erythema multiforme.[175] Although this disease has been considered primarily pediatric, approximately a third of the cases reported since 1922 have occurred in patients over fifteen years of age,[176–180] the case reported by Jones et al.[180] having occurred in a fifty-six-year-old woman. A case with an erythematous skin eruption associated with fever, a purulent conjunctivitis, severe stomatitis and balanitis is reported by Patz.[181] Corneal ulceration with opacification was the only sequela. The course and clinical picture were almost identical with those in the cases described by Stevens and Johnson.

Bacteria

In children the exanthemas of scarlet fever, measles and rubella are readily recognized owing to age expectancy, but in adults they are frequently mistaken for other diseases. Unless a disease is endemic or epidemic, recognition of an infectious or contagious disease by its cutaneous manifestations alone is difficult. The rose spots of typhus and typhoid fever may be similar. In the former, however, these spots change to petechiae, the so-called "mulberry rash." Petechiae often have a diagnostic and prognostic value.

Twenty years ago Hurxthal[182] described the skin manifestations of subacute bacterial endocarditis and stated that petechiae are found in 50 per cent of cases; conjunctival lesions are most reliable. Small, red or pinkish, cutaneous macules due to emboli and ranging from 2 to 4 mm. in diameter are often found on the inside of the palms and on the fingers, soles and toes. These first blanch on pressure, but later may or may not; they clear, leaving areas of fawn-colored pigmentation. Osler nodes are also present, especially at the tips of the fingers and toes, and consist of tender cutaneous nodes. Other lesions, such as purpura, deep tender erythematous nodules and various skin rashes, have been reported. Embolic plugs or hemorrhages of the retinal vessels are common. Osler nodes or conjunctival lesions may be indicative of bacterial endocarditis.[182]

Jones and Tichy[183] state that a special search should be made for petechiae, Osler nodes, Janeway lesions, splinter hemorrhages beneath the nails and glossiness of the rim of the skin at the nail bases, indicative of early clubbing of the fingers,[182] splenomegaly and changes in the heart murmur. They report 9 cases in which penicillin sterilized the blood in 7.

In the last few years there has been an increase in the number of cases of anthrax in Massachusetts; therefore, physicians should be on the alert for early diagnosis and the rapid institution of penicillin, which is apparently of great value in the control of this disease. From 1940 to 1945 there were 21 cases, with 7 deaths — a mortality of 33 per cent.[184] Furthermore, it appears that the majority of deaths can be avoided if the disease is recognized at an early date and penicillin therapy is immediately instituted.[184–186]

A report of 25 cases by Ellingson et al.,[187] with uneventful recovery, recommends the use of penicillin. Their description of the initial lesion is well worth repeating. The earliest visible sign is a small, red macule that becomes elevated to form a firm, red papule. Within a few hours there appears a central vesicle filled with clear or opalescent fluid in which organisms can be demonstrated by smears and cultures. The vesicle may rupture early, leaving a small ulcer or may enlarge by direct extension or by development of a ring of satellite vesicles. A zone of deep-red indurated tissue 2 to 3 mm. wide surrounds the vesicles and in turn is surrounded by a zone of erythema 5 to 20 mm. wide, fading toward the periphery. Edema about the lesion may be present. A striking feature of the infection is the absence of pain in the lesion itself, which is in sharp contrast to abscesses caused by the common pyogenic organisms. Enlarged regional lymph nodes, however, may be acutely tender during the development of the anthrax lesion.

Pseudomonas aeruginosa infection may be accompanied by various cutaneous eruptions. Stanley[188] states that prominent among the signs of pyocyaneous sepsis are skin lesions that begin as macules or vesicles and later become bullous or often pustular. When the surface epithelium is denuded from the lesions and the center sloughs out, a characteristic ulcerated gangrenous area is produced. This was first described by Barker[189] in 1897 and was later named "ecthyma gangrenosum" by Hitschmann and Kreibich.[190] Detailed descriptions of ecthyma of this type were given by Fraenkel[191] in his classic paper written in 1917. It is most frequently encountered in the anogenital region, and also in the axillas, the inner aspects of the thighs and the abdomen, particularly in children. The organism is easily cultured in abundance from these areas of gangrenous skin. The necrosis may penetrate through the skin and subcutaneous tissue to the underlying muscle. Other lesions of the skin seen during the course of bacteremia include the roseola occurring in cases of so-called "Shanghai fever" described by Dold.[192, 193] Erythema nodosum,[194, 195] erythema multiforme and butterfly lesions of the face[196] resembling lupus erythematosus have also been described during the course of systemic infections with *Ps. aeruginosa*.[188]

Stanley believes that the characteristic lesions are ulcerating gangrenous areas on the skin (ecthyma gangrenosa), particularly in the perianal and axillary regions, which were exhibited in 3 of his cases. One of them showed an acute exacerbation of chronic disseminated lupus erythematosus. At the time I saw this patient he had a superimposed eruption resembling an erythema multiforme bullosum of the Stevens–Johnson type.

In treatment the sulfonamides and streptomycin are the agents of choice. A most important point emphasized in Stanley's paper is his statement that sepsis and other serious infections due to this organism are definitely rare. However, because of the widespread use of penicillin, which efficiently removes gram-positive organisms but apparently promotes uninhibited growth of this and other gram-negative bacilli, the incidence of such important infections seems to be increasing.[197]

Illness due to *Brucella melitensis* infection may be associated with a rash, nosebleed, glandular swellings and nasal ulcerations. The rash, macular in character, resembles that seen in streptococcal septicemia; the glandular swellings may simulate those of Hodgkin's disease. In a report of 20 cases in Iowa, Jordan and Borts[198] state that the illness was characterized by fever, chills or chilliness, sweating, weakness, loss of weight, headache, muscular pains and leg pains. Although the course was mild in several cases, infection was generally severer than that caused by *Br. abortus*.

Meningococcal meningitis, also known as spotted fever or cerebrospinal fever, is apparently more prevalent during wartime than at other times. Recognition of the rash is extremely helpful.

Osborne et al.[199] give a clear description of the evolution of the exanthema. In 59 cases (82 per cent) a rash was observed on admission. The skin eruption was purpuric, resembling the so-called "fleabite." These petechial hemorrhages occurred early in the course of the disease and in many cases multiplied rapidly within a short time on the arms and legs, especially about the ankles. Characteristic petechial hemorrhages occurred in the mucous membranes of the mouth and eyes and also on the palms and soles. This fact was helpful in diagnosing the disease in Negroes, whose skin is lighter on the palms and soles than on the rest of the body, making the eruption easy to detect. The organisms can be cultured from these spots and can also be directly visualized by the technic outlined by Tompkins.[200] There has been some speculation why the meningococcus has a predilection for the skin and — in the Waterhouse–Friderichsen syndrome — the adrenal glands. Sacks[201] thinks that the meningococcus has an ectodermal tropism that accounts for this. The Waterhouse–Friderichsen syndrome is characterized by the fulminating onset of a petechial or purpuric skin eruption, a peculiar dyspnea and cyanosis and profound peripheral circulatory collapse.[199, 202]

In the last few years the Waterhouse–Friderichsen syndrome has been reported in adults. Formerly it was thought that the disease was limited to children between the ages of two months and two years, occurring rarely in patients over nine years of age. Until February, 1943, there were only 103 cases reported in the literature, and among these only 3 patients recovered. Peabody[203] reports a recovery in an adult who suffered from such enlargement of the petechial spots that she developed deep pressure sores. Two reports stress the value of adrenocortical hormone in treatment.[204, 205]

Hill and Kinney[206] present an excellent clinical and pathological study of the cutaneous lesions in acute meningococcemia based on 5 cases. The presence of a skin rash has always been recognized as one of the earliest and most reliable clinical signs in meningococcemia, a fact that has led clinicians in the past to employ such titles as "malignant purpuric fever," "petechial fever," "black fever" and "spotted fever" for these infections. Concomitantly with the stage of bacteremia, or at various intervals thereafter, the meningococci metastasized to the skin, eyes, joints, heart, adrenal glands or meninges, producing various clinical syndromes. The onset and course varied widely, and the cutaneous patterns included erythematous macules, papules, nodules, vesicles and petechial and purpuric lesions. In some of Hill and Kinney's cases lesions similar to those of erythema nodosum appeared on the lower extremities and were indistinguishable from the type encountered in other

diseases. In none of these cases was purpura found alone, but in every case in which it occurred it was associated with petechiae. Necrosis and sloughing of purpuric lesions and gangrene of the extremities occurred in 2 patients who recovered.

The sequence of events in the pathogenesis of the lesions is the localization of the meningococci in the endothelium, followed by endothelial damage and inflammation of the vessel walls, with resultant necrosis and thrombosis. These changes, by permitting the extravasation of red cells, account for the hemorrhagic cutaneous lesions. In all cases studied in which the skin manifestations were severe, thrombi were a striking and invariable finding. They were composed largely of platelets that were attracted to the damaged endothelial linings. In 2 cases in which purpura was a striking feature, the blood platelets were greatly reduced. Thrombocytopenia is known to occur in many of the severe febrile illnesses, such as septicemia, typhoid fever, typhus fever, scarlet fever and miliary tuberculosis, and it is not unlikely that the fever is also a factor in the reduction of the platelets in this group of cases. Vascular lesions were not restricted to the skin. Petechiae and hemorrhagic manifestations were found over the serous surfaces and in the mediastinum, epicardium, endocardium, lungs, liver, kidneys, adrenal glands, intestines and spleen. The vascular lesions were similar to those in the skin. In other words, the skin lesions are but one manifestation of a generalized pathologic process.[206]

Tuberculosis of the skin is fortunately rare in this part of the country. Because of the frequency of pulmonary tuberculosis, however, internists are always on the lookout for the cutaneous manifestations. Floyd et al.[207] conducted interesting experiments by superimposing cutaneous tuberculosis in the guinea pig with pulmonary tuberculosis. They discovered that it had a distinctly modifying effect on the disease in the lung through the response of the liver to infection. This study was based on clinical work done on the subject of immunity or resistance to phthisis resulting from accidental or deliberate involvement of the epidermis with the tubercle bacillus. Among certain observers it has long been an axiom that whenever lupus is present pulmonary tuberculosis rarely occurs subsequently; when it was acquired in a case of pre-existing pulmonary tuberculosis, the course of the disease was materially modified.[207]

A recent classification by Cipollaro[208] of the cutaneous lesions found in tuberculosis divides these manifestations into a localized tuberculosis and hematogenous types. Among the latter he includes sarcoids. The difference in clinical and histologic characteristics can be accounted for by the differences in susceptibility, allergy, virulence of organisms, environmental factors and the like. Whether sarcoid should be included under tuberculosis is questionable. The etiology and pathogenesis of sarcoid are not known, and its relation to tuberculosis is not established. Frequently these patients are admitted to sanatoriums or exposed to tuberculosis and in this way acquire the disease.

Fungi

Smith[209] presents an excellent review of fungous infections encountered in general hospital practice—I might add, provided the hospital has a trained mycologist. His illustrations are remarkable. He discusses the deep mycoses, including histoplasmosis, which has caught the imagination of the medical world. Darling's[210] original cases were characterized by fever, emaciation, anemia, leukopenia, splenomegaly and hepatomegaly. More than 50 cases of histoplasmosis have been recorded in the literature, and Schlumberger and Service[211] report a case with autopsy in a nine-and-a-half-week-old baby. Thomas and Mitchell[212] report a case presenting on first impression a syndrome resembling acute adrenocortical insufficiency and later that of a generalized fungous infection, presumably blastomycosis, that was demonstrated ante mortem by material obtained from biopsy to be one of histoplasmosis. The patient presented extensive and generalized embolic cutaneous papular lesions.

Sarcoidosis

In recent years internists, roentgenologists and pathologists have become deeply interested in such entities as disseminated lupus erythematosus, scleroderma, dermatomyositis and polyarteritis nodosa. Although clinically they are distinct, attempts have been made to establish a common pathological denominator.[213] The first three are definite cutaneous diseases with a characteristic dermatologic pattern. Sclerodermal changes of the heart and lungs evidenced by roentgen-ray examination and autopsy are reported.[214] A pathologist stated that he could diagnose scleroderma from a section of the heart, but admitted that a sclerosed cutaneous patch might be confirmatory.

Apparently, no such cutaneous confirmation is necessary for disseminated lupus erythematosus or sarcoidosis. To students of sarcoidosis the testimony on questionable cases of industrial pneumonitis is interesting but confusing. The review of Higgins[215] is worthy of study. In an article on pulmonary sarcoidosis he reports that in four years as an industrial physician he had met with 35 cases, with 3 deaths. The first and most noticeable symptom was shortness of breath; cyanosis and clubbing of the fingers and toes might or might not be present. Skin lesions occurring on the fingers, the front of the thighs and the shins were noted in 5 cases. These lesions were similar to papulonecrotic tuberculids. By microscopical examination they were diagnosed as typical sarcoids. X-ray films were suggestive of silicosis. Those of the chest showed a diffuse granularity and nodulation throughout the entire

lung fields. There was no enlargement of the lymph nodes. Bacteriologic study revealed acid-fast bacteria in 8 or 10 cases.

All but 2 of the 35 patients had been engaged in the manufacture of fluorescent mercury-vapor lamps.

According to Higgins the disease does not fit in exactly with the usual conception of Boeck's sarcoid, in which most patients recover. There is considerable evidence that one is dealing with an infection: in the first place, the lesion is similar in nature to tuberculosis; secondly, the disease appears three or four years after the last exposure; lastly, it was possible to identify the same bacterium in several cases, although its pathogenicity has not yet been proved. The possibility of a carrier arises.

The phosphors in most general use were zinc beryllium manganese silicate, magnesium tungstate, magnesium silicate, zinc orthosilicate (willemite), cadmium borate and lead fluoride. These powders were processed in a plant of the company in another state, where 2 cases of sarcoidosis were found. One occurred two years after exposure to fluorescent powder. Most attention among the phosphors has been directed toward zinc beryllium manganese silicate and especially to its beryllium component. It is made by mixing of beryllium oxide, manganese oxide, zinc oxide and silicic acid. About the time the first of the sarcoidosis cases were seen there were 5 definite cases of acute chemical pneumonitis in employes who had been using zinc beryllium manganese silicate, but not in the plants where the patients mentioned above worked. These persons had had considerable exposure to the dust of this phosphor.

At about the same time there were reports of a number of cases of severe acute chemical pneumonitis in plants where beryllium processing was being done. The evidence in these cases indicates that the pneumonitis was due not to beryllium but to hydrofluoric acid or sulfur trioxide, which were released into the atmosphere during processing. This acute pneumonitis is clinically and roentgenologically a distinctly different entity from sarcoid. Chemical analysis of the lungs of the patients who had died did show some beryllium present.

In summary, Higgins[215] states:

> It may be said that there is considerable circumstantial evidence that beryllium is the responsible agent in the causation of sarcoidosis by reason of the association of sarcoid cases in industries using beryllium. However, there is still lacking proof that beryllium or its compounds will cause lesions similar to the sarcoid lesions found in the 35 patients described. The prolonged waiting period is not in keeping with the usual behavior of the acute phases of chemical poisoning.

Beryllium poisoning, a recognized entity, is an industrial disease that demands attention because of the loss of manpower and the fatalities incident to increased production in the beryllium industry. During the last four years 170 cases of poisoning were seen among workers in three plants producing beryllium and its compounds and alloys. The manifestations included dermatitis, chronic skin ulcer and inflammatory changes in the respiratory tract and skin and respiratory changes, occurring concurrently or singly. The severest manifestation was diffuse pneumonitis, which caused the death of 5 patients. Experiments conducted by Hyslop and his associates[216] showed that several beryllium compounds are toxic to animals. Both pneumonitis and dermatitis were produced experimentally.

Marradi Fabroni[217] coined the term "berylliosis" for this pathologic condition. The ulcers occur on the exposed parts, particularly the forearms and hands, and are discrete and as a rule single. They cause little distress unless they become infected or are located near a joint and thus subjected to the trauma of motion. Treatment comprises early incision of the papule and curettage of the fibrous base. This center consists of caseous material within which the beryllium crystal can usually be identified. Healing does not take place until the embedded crystal is eliminated.[218]

Harrell[219] gives a clear description of generalized sarcoidosis, but the dermatologic picture varies from that of Boeck,[220] who describes a symmetrical eruption consisting of nodules on the head and the extensor surfaces of the skin. They ranged in size from a hemp seed to a bean, and the larger lesions had irregular contours. The lesions involved the skin and were movable with it. At first bright red, they became darker and finally assumed a yellowish or brown color. Slight scaling occurred in the older lesions. There was an increase of lymph nodes and leukocytes.[220] Harrell states that the clinical picture is one of a generalized disease that is most easily recognized in the skin and lymph nodes. The symptoms are those recognized in any chronic disease of low virulence and are not specific. Lesions are found by x-ray examination in the lung fields in most cases. These are usually of three types: peribronchial fibrosis or thickening, usually extending downward symmetrically into the lower lobes; symmetrical infiltration in the midlung fields, sparing the apices; and areas resembling miliary tuberculosis with a fine marbled or reticulated appearance. Eosinophils are usually present at some time and may reach 15 to 30 per cent.[219] Another type of x-ray appearance is that of diffuse and confluent infiltrations, which may represent a transition from other forms of sarcoidosis and may easily simulate, if not actually develop into, tuberculosis.[221]

Sarcoidosis can be fatal. Nickerson[222] reports that in 6 cases in which autopsies were made, the typical histologic picture of sarcoid was found in the viscera. In 1 case the patient undoubtedly died of sarcoid in a fulminating form. The other cases were examples of incidental sarcoid, the patients dying of

some major disease. Nickerson reported lesions in the myocardium, endocardium, pancreas, testis and vertebral and femoral marrow for the first time. A varying amount of collagen was noted in each case. It was minimal in the case in which death was apparently due to the disease, and it is suggested that an increase in the amount of collagen indicates a healing reaction.

On the theory that sarcoid, like lymphogranuloma inguinale, is a virus and that, as with the latter, an antigen could be prepared from infected material for diagnostic use, the following work was done by Williams and Nickerson.[223] A sarcoid lesion of the skin, 2 cm. in diameter, was removed. A portion of the tissue was taken for microscopical study, and the remainder was ground with the aid of sterile sand. To this, physiologic saline solution was added in a volume equal to six times that of tissue. This preparation was then sterilized by heating to 60°C. for two hours on two consecutive days. Aerobic and anaerobic cultures were negative at the end of forty-eight hours. In each of the following cases stained sections and animals inoculated with the tissue removed were negative for tuberculosis. The patients showed no evidence of tuberculous infection on clinical examination, cutaneous tests or x-ray examination. The authors summarized their work by stating that 4 cases with clinical and pathological evidence of sarcoid gave skin reactions following the intradermal injection of an antigen made from a sarcoid lesion of the skin. Four normal subjects gave no such reaction. The results suggested that sarcoid is a virus disease and that it is possible to prepare a diagnostic antigen.

Several years later Kveim,[224] unaware of the report of Williams and Nickerson, announced the Kveim reaction for Boeck's sarcoid. After Kveim's first account of a new and specific cutaneous reaction for this disease, further investigations were carried on by Danbolt[225] and by others in the Scandinavian countries. Investigations indicate that the Kveim reaction is an allergic cutaneous one specific for Boeck's sarcoid. A test was made on 104 subjects, 36 of whom had Boeck's sarcoid. A positive Kveim reaction appeared in most patients in the course of the two first weeks after the antigen had been injected. A positive reaction as a rule remains positive for many months. Whereas Kveim's reaction was positive in 34 of 36 cases of definite Boeck's sarcoid, it was negative in all 64 cases that showed no symptoms of this disease. A positive Kveim reaction is a valuable support to the diagnosis of Boeck's sarcoid.[224, 225]

Pautrier[226] proposed the name of "disease of Besnier–Boeck–Schaumann" to designate a benign and chronic disease, perhaps tuberculous, which reveals itself in cutaneous, ocular, respiratory, lymphatic and osseous manifestations. He associated with the disease of Besnier–Boeck–Schaumann an affection known to ophthalmologists as the syndrome of Heerfordt.[226, 227] It consists of iridochoroiditis associated with bilateral parotitis, peripheral facial paralysis, recurrent paralysis and often cutaneous manifestations. Lastly, some cases of granular conjunctivitis of Parinaud are undoubtedly associated with Besnier–Boeck–Schaumann disease.[228] This disease, extremely variable in its clinical forms and in its evolutionary methods, usually manifests itself by persistent but not pronounced signs, reaching the eyes, the respiratory apparatus, the skeleton, the lymphoid organs, several glands, such as the parotids, and the spleen, liver and kidneys. But the favorite site is the skin, where it reveals itself by several lesions belonging to the groups of sarcoids.[229–231]

Longcope[232, 233] reported that in 11 of his 30 cases of sarcoid eosinophils comprised 6 to 35 per cent of the leukocyte count. During the active phase of the disease the sedimentation rate was sometimes elevated. A noticeable alteration of the plasma proteins was observed; there was an unusual increase in the globulin fraction, often resulting in a definite elevation of the total plasma proteins, even though plasma albumin showed normal or subnormal values.

A review of the literature on sarcoidosis for the last three years reveals no new developments or theories concerning its etiology or treatment. In April, 1944, Reisner[234] reviewed 35 cases. Thirty of these patients were Negroes. The age distribution was eight to over forty years. A study of 15 cases by Thomas[235] in 1943 revealed similar findings. Twelve patients were Negroes, and 13 were females. In all cases there was involvement of several organs, including the skin, lymph nodes, lungs, spleen and liver. The period of observation varied between one and seven years.

Dermatologists have long recognized the systemic manifestations of sarcoid. They realize that the sum total of clinical and pathological findings will determine the diagnosis, not a single finding such as that provided by x-ray study or biopsy. An interesting discussion on chronic granulomas shows the difficulty of diagnosing these conditions without extensive laboratory studies.[236] Included is a case report of a sixty-five-year-old man originally presenting an eruption so nondescript that a dermatologist made a diagnosis of scabies. Later, the patient showed definite nodular lesions on the lower legs. These progressed to pustulation and ulceration, with systemic disturbances that resulted in a fatal ending. The final anatomic diagnosis was tuberculosis of the skin, lungs, liver and spleen.

Lupus Erythematosus

Over a hundred years ago, in 1841, Cazenave studied an entity previously described by Biett and gave it the name "lupus erythematoides." Appearing usually on the face, the red elevated, well defined, scaly and atrophic patches of the discoid type of lupus erythematosus are disfiguring.

This is especially true in the late stage, owing to atrophy, dirty scaling, stippling and telangiectasia. The disease arouses little interest in the physician because of lack of systemic manifestations. One might believe it to be entirely distinct from disseminated lupus erythematosus if stimulation from sunlight or irritating local or intravenous therapy, such as that with gold, did not frequently transform the local lupus erythematosus to a disseminated type with vascular and nephritic disturbances.

Acute lupus erythematosus disseminatus is a definite clinical entity, with erythematous patches on the face, hands, toes and frequently other areas of the skin. Occasionally, a multiform eruption with bullae, vesicles, purpura and generalized telangiectasia appears. The first attack may be mild, but there are usually a septic temperature, pains in the joints and muscles, lymph-node enlargement, gastrointestinal disturbances and prostration. Anemia, leukopenia and albuminuria are frequent complications. The Libman–Sacks syndrome presents a symptom complex of a septic fever, arthritis, polyserositis, leukopenia, increased globulin, renal disease and verrucous endocarditis. The cutaneous lesions are superficial and vascular. Most cases occur among young women, although an occasional man is affected.

Dine and Wilson[237] report a case of disseminated lupus erythematosus in a man with a clinical course of seventeen months. Autopsy revealed thickened serous surfaces, small endocardial vegetations of the Libman–Sacks type and collagenic changes throughout the body involving blood vessels, muscles, serous membranes and the endocardium. Kidney sections showed "hyaline thrombi" with a few "wire-loop" lesions of the glomeruli.

Overexposure to sunlight or ultraviolet radiation preceded the onset in a few of my patients. Other cases have followed a focal infection or an attempt to remove one, such as tonsillectomy or the extraction of an infected tooth. Fox[238] suggests allergy as a factor, after citing a case following the injection of horse serum.

In this country little or no etiologic significance is attributed to the rare association of this disease with tuberculosis, but some European observers still adhere to the relation between these two conditions. The diagnosis of Libman–Sacks syndrome without cutaneous manifestations is becoming too popular. Without an erythematous eruption one should be careful in making a diagnosis of lupus erythematosus disseminatus.

I am inclined to agree with Wesselhoeft and Weinstein[239] in rejecting the Dicks' resurrection of the term "scarlatinae sine eruptione" for lupus erythematosus. Without the rash there is no scarlet fever, even though the patient is infected with a streptococcus that is causing a rash in other patients. To include all infections of the toxin-producing streptococci as scarlet fever is a misuse of the term, since the resistance of the host is an equally important factor.

In a patient whose condition had been wrongly diagnosed as lupus erythematosus owing to x-ray findings, without an eruption, after two weeks' hospitalization without infectious precautions, a diagnosis of tuberculosis was finally made after a sputum examination showed numerous tubercle bacilli.

An interesting discussion on the diagnosis of lupus erythematosus disseminatus in a nine-year-old Negro admitted to a hospital because of cervical and axillary lymphadenopathy, but no eruption, has been presented.[240] The pathologist was unable to refute this diagnosis at autopsy. Klemperer[241] states that this disease rarely occurs in children. The patient under discussion had a white-cell count of 22,000.

The pathology of acute disseminated lupus erythematosus has been a subject of controversy. Klemperer et al.[241] believe that the thesis formerly advanced — that lupus is fundamentally a diffuse vascular disease[242] — is no longer tenable. They present evidence that the basic pathological lesion is a characteristic type of focal connective-tissue degeneration, with all elements taking part in the reaction. Inflammatory reaction, although variable, is nonspecific in type and relatively inconspicuous, and in their words "the alterative phase of the process is far out of proportion to the exudative."[147]

Scleroses

O'Leary[243] classified the dermatoscleroses as a group of diseases that have certain features in common and for that very reason present difficulties in diagnoses. These include scleroderma, scleredema adultorum, acrosclerosis and dermatomyositis. A diffuse collagen disturbance has been suggested as a basis for the resemblance of certain of these diseases to each other. They resemble each other because of the solid edema and sclerosis of the skin.

In scleroderma death is due to diffuse involvement of the viscera. Lindsay et al.[244] describe the lesions of the esophagus. In the early stages there is inability to swallow more than a few mouthfuls of liquid, especially while the patient is lying down, a sense of fullness behind the sternum and a burning sensation an hour after eating that is worse when the patient is lying down at night. Fluoroscopy shows localized narrowing of the esophagus 10 to 12 cm. above the level of the diaphragm, measuring 5 to 8 cm. in length. Dostrovsky[245] reports 3 cases of progressive scleroderma, all presenting acrosclerotic symptoms. Varying degrees of roentgenologically identified lesions of the lungs of a sclerotic nature are described. In 2 of the cases, fibrous and cystic changes of the lungs of a sclerodermal nature were found at autopsy.

Acrosclerosis is characterized by hardening of the skin and vasospasm of the extremities. The course is fairly benign; the prognosis regarding life and physical activity is better than that in scleroderma.

Scleredema adultorum follows an acute respiratory-tract infection, with edema of the face or upper part of the chest. The disease heals spontaneously. Vallee[246] reports 4 interesting cases following febrile diseases. He shows that scleredema adultorum is found in children and adolescents and that it is a systemic disease, characterized by firm, nonpitting edema affecting usually the face, neck, scalp, conjunctivas, thorax, occasionally the arms and, more rarely, the legs; it spares the hands and feet. Pleural effusions, pericardial effusions and hydrarthroses also occur, the former being localized. The electrocardiogram shows low voltage of the QRS complexes. When the disease involves the face differentiation from dermatomyositis is difficult. Muscle pain, fever, a high sedimentation rate and the widespread erythematous skin lesions occasionally seen in dermatomyositis, as well as the weakness and atrophy that are constant features of the latter disease, are not encountered in scleredema.[246]

In dermatomyositis the muscles of the shoulder girdle, neck and arms are the most vulnerable of the entire body once the disease has started. Jager and Grossman[247] believe that in general the histologic changes in the muscle are nonspecific for dermatomyositis. Keil[248, 249] has described what he calls the dermatomyositic facies, which he regards as consisting of two elements: definitely swollen eyelids with narrowing of either one or both lid spaces, together with a degree of edematous involvement of the adjacent portions of the cheeks and nose, and a background of faint, rosy or pale-blue skin (some call it wine-colored); the net effect is to create a sort of heliotropic bloating of the face resembling the earlier stages of cadaveric decomposition. Little is known of the exciting agent of dermatomyositis. At the present time it is prudent to accept the broad hypothesis that the various manifestations of this disease are caused by various bacterial factors.[250]

Periarteritis nodosa is a usually fatal disease of alleged infectious etiology, involving the smaller arteries. Various types of subcutaneous nodules and cutaneous lesions are seen in about 40 per cent of cases. Cutaneous lesions vary from purpura and petechial hemorrhages to areas of necrosis. The veins are involved in a lesser degree. The pathological picture presents a necrotizing inflammation of the lining of the arteries with a pleomorphic infiltrate and resulting injury to the wall of the vessel. It is seen at all ages, even in infancy,[251] more frequently among males. Treatment has been of little avail. The association with allergic conditions was discussed above in the section on allergy.

Grant[252] reports 7 cases in detail. He agrees with Leishman[253] that the rarity of the diagnosis must be due at least in part to unfamiliarity with the disease. Many of the cases present a complex combination or succession of symptoms that sooner or later suggests the diagnosis. Grant lists his own experiences and gives a review of the majority of previously published cases, which number about 350. The pathology was well described in 1928 by Gruber,[254] and little has been added since. The various stages present in a single case agree with the clinical evidence that the lesions tend to occur in crops in the course of the disease, which may last for weeks, months or years. Since only short stretches of the affected vessels are attached, Grant emphasizes the necessity of examining excised tissue in serial sections. A characteristic of the disease is a changing clinical picture; fresh symptoms develop and older ones subside, often to recur, so that numerous diagnoses are made before the nature of the disease is recognized.

Leukocytosis may be extreme, with white-cell counts of 40,000 to 60,000. Rarely is there leukopenia. Eosinophilia is present in over 30 per cent of cases in which a differential count has been recorded, and the count may reach high figures — 70 per cent in Strong's[255] case. The evidence suggests that periarteritis nodosa is much less rare than is generally believed, that it is not necessarily or even usually fatal and that it can be recognized at the bedside in a considerable proportion of cases.[252]

Treatment

Since the close of the recent war many remarkable advances in therapy have been announced. Streptomycin has been of definite value in tularemia and other serious diseases. O'Leary[256] states that although not the ideal agent for the treatment of cutaneous tuberculosis and tuberculids, it offers considerable promise because of its efficacy in guinea pigs inoculated with tuberculosis and because of the varying degrees of improvement in human beings. The therapeutic trials should be continued, and more should be done to stimulate laboratory investigations for a therapeutic agent that will have a more intense specific action against tubercle bacilli in human beings. New antibiotics, such as dihydrostreptomycin, a more stable derivative of streptomycin, and erythrin, extracted from the erythrocytes of rabbits, have been announced.

Radioactive isotopes and the nitrogen mustards have been introduced as agents of promise in therapy of diseases of the lymphoma group.[257] They are dangerous remedies, but in my opinion the relief — physical and symptomatic — of the cutaneous manifestations of these maladies outweighs the dangers of therapy. As yet evidence has not been obtained of any therapeutic effect by radioactive phosphorus (P32) on mycosis fungoides, xanthomatosis, melanoma, Ewing tumor, carcinoma of the breast or gall bladder or monocytic leukemia.[258] Radioactive phosphorus may be used externally for the treatment

of chronic lesions or growths.[259] Salutary results have been obtained with nitrogen mustard therapy in Hodgkin's disease, lymphosarcoma and chronic leukemia, with dramatic improvement observed in the first two disorders.[260]

Intravenous injections of ether have been used for pruritus and for relief of the painful ischemia in diabetes, Buerger's disease and Raynaud's disease. One may visualize many new possibilities, including less dangerous derivatives of nitrogen mustard gas and better control of radioactive phosphorus, in the treatment of nonfatal diseases such as atopic dermatitis.

Numerous authors have reported excellent results in the use of Benadryl and Pyribenzamine in various cutaneous eruptions, with stress on the results in urticaria.[261–263] I have tried them in almost every pruritic eruption seen in my office, from industrial dermatitis to dermatitis herpetiformis. About 20 per cent of the patients acquired some temporary relief, even those with the latter disease. With the exception of urticaria the pruritus recurred despite the fact that the patient continued to take the medication; in chronic urticaria relief stopped with cessation of the drug.

On the other hand new untoward effects are being added to those already known. Drowsiness, dizziness, weakness and nausea are the reactions most frequently encountered. Sixty-three per cent of patients in one series experienced side reactions, the chief one being drowsiness of varying degrees up to narcolepsy.[264] After taking 300 mg. of Benadryl for three days, 1 patient complained of palpitation, dimmed vision, malaise without drowsiness and heartburn with nausea. After the next regularly scheduled dose (making a total of 350 mg.) the patient was found unconscious in bed, cold, pale and pulseless. On the eleventh hospital day Benadryl was again started under careful observation. Again after 300 mg. for three days the patient had similar symptoms.[265] Borman[266] reports a case in which the patient became lethargic, confused and disoriented from an overdose of Benadryl, reported to be 2000 mg. in forty-eight hours. Slater and Francis[267] recently discussed the use of Benadryl as a contributing cause of an accident.

Granulocytopenia has been reported from the use of Pyribenzamine.[268] In 2 cases I have seen cutaneous eruptions following its administration. One was a papular eruption that disappeared with discontinuance of the drug and recurred with a test dose. The second occurred in a man who presented an extensive purpura with thrombotic ulcerations on the legs following the prolonged use of Pyribenzamine.

Para-aminobenzoic acid in combination with proper supportive therapy has relieved Rocky Mountain spotted fever. The results in 5 patients with this disease suggest that deaths from this malady may be practically eliminated by such combined therapy.[269]

The pigmentation of adrenocortical deficiency has been arrested by grafts of adrenal glands, adrenocortical extracts and the synthetic desoxycorticosterone acetate.

Cutaneous eruptions have so many etiologic factors that no one remedy can be specific. Urticarial eruptions may be seen with almost any systemic disturbances; hence the varied medication, such as vitamin K.[270]

The use of vitamin K in skin diseases still commands attention. Much study has recently been devoted to the possible connection between certain cutaneous diseases and the levels of vitamin A in the blood plasma. Two British investigators[271] found little difference in the plasma vitamin A levels in 116 dermatologic patients and 116 control patients — a mean value of 116 international units of plasma in patients with skin disease and 113 international units in the controls. In 6 cases of Darier's disease, 2 of pityriasis rubra pilaris and 3 of ichthyosis, however, the mean level of vitamin A in the plasma was 77 international units. In the patients with Darier's disease and pityriasis rubra pilaris the administration of large doses of vitamin A concentrate resulted in an eventual plasma vitamin A level considerably above normal values. In 2 of the patients with Darier's disease the skin became normal or nearly so after treatment with vitamin A and grenz rays. Two of the patients with pityriasis rubra pilaris showed some, but incomplete, improvement of the skin when the plasma vitamin A reached normal or higher than normal levels.[272]

Encouraging results have been obtained in ichthyosis by Gordon,[273] who postulates two types of therapy, the combination of which have brought him great success. Therapy consists of daily baths in 3 per cent sodium chloride solution followed by 10 per cent sodium chloride in hydrous wool fat and vitamin A internally in daily doses up to 200,000 units, with bile salts and neostigmine. Complete cure was effected in 1 case fifty-one days after treatment was started.

Charpy,[274] in France, and Dowling and Thomas,[275] in England, have reported extremely encouraging results with calciferol in the treatment of lupus vulgaris. Vitamin D_2 in propylene glycol was administered by mouth to a series of 39 patients, some of whom had old, stubborn and extensive lesions. Charpy considers a high calcium intake a necessary adjunct to calciferol therapy in this disease. The quantity of sodium chloride ingested was reduced. All 39 patients treated were completely cured, 12 of them by internal therapy alone.

At the last meeting of the Society for Investigative Dermatology Curtis et al.[276] reported the successful use of calciferol and dihydrotachysterol therapy, with and without added calcium, in the treatment of sarcoid.

Norman[277] believes that vitamin D therapy, rather than parathyroidectomy, is the treatment of preference in scleroderma and the related disorders that are accompanied by hyperfunction of the parathyroid glands. He suggests that chronic overfunction of these glands constitutes a common denominator in scleroderma, dermatomyositis, chronic arthritis, Raynaud's disease and arteriosclerosis. He reports 3 cases of sclerosis, all with skin manifestations and apparently some muscle and tendon involvement. In all the cases improvement to the point of complete rehabilitation occurred, with restoration of normal skin and presumably a normal condition of the arterioles. Bernstein and Goldberger[278, 279] report the relief of scleroderma by dihydrotachysterol (AT-10). This substance, which is formed when tachysterol — one of the irradiation products of ergosterol — is treated with sodium and propyl alcohol, has a mild effect on increased excretion. In these effects it falls between vitamin D and parathyroid hormone. Dihydrotachysterol causes a marked increase in urinary phosphorus excretion as compared with vitamin D.

I have used AT-10 in 5 cases — 3 localized and 2 generalized. The results were somewhat encouraging in the localized but disappointing in the generalized cases. I have, however, had the same results with other medication. Careful laboratory studies of patients must be made during therapy with large doses of vitamin D. Kaufman et al.[280] furnish fairly conclusive evidence that their patient died of high-potency vitamin D(ertron) intoxication.

Scleroderma is apparently associated with parathyroid dysfunction — either hyperfunction or hypofunction. Repeated serum calcium, total protein and phosphorus determinations should be done to determine the classification of the patient. If he falls in the hypoparathyroid group, dihydrotachysterol is the drug of choice. If he falls in the hyperparathyroid group, a partial parathyroidectomy should be performed, followed by large daily doses of vitamin D.[281–283] Cytochrome C may help. This substance, a protein normally present in all living tissue, may be injected to combat tissue anoxia. Proger and Dekaneas[284] believe that conditions in which anoxia is thought to play a role might be benefited by the injection of cytochrome C. Since there is considerable unused oxygen in venous blood, even in severe cases of anoxia, the role of cytochrome C is to promote utilization of the oxygen by tissues.[284]

Spies[285, 286] reported prompt regeneration of the blood and profound improvement in the glossitis following the administration of synthetic folic acid to 2 patients with macrocytic anemia in relapse and pellagrous glossitis.

New vitamins are constantly appearing. In 1939 Scarborough[287] presented evidence from experiments on human subjects to prove the existence of a factor decreasing capillary fragility, the factor being vitamin P. Rutin, which like vitamin P is a flavone glucoside, is supposed to have the same properties. According to Griffith,[288] it is a constituent of a variety of plants, including tobacco, garden rue, forsythia, elder flowers and violets. He administered rutin to 11 patients; capillary fragility became normal in 8 of these cases within two months after the beginning of medication.

Rutin therapy has been used in hereditary hemorrhagic telangiectasia.[289] Kushlan[290] gave a patient rutin in doses of 40 mg. three times daily. A remarkable change in the character of the bleeding was noted twenty-four hours after the start of medication. The daily epistaxis and bleeding from the gums ceased for the first time since childhood and had not recurred at the time of writing.

A recent editorial seems somewhat timely. It reads as follows:

> Rutin is a new agent for which certain therapeutic claims have been made with reference to disturbances of capillary fragility and permeability. Rutin is said to be a glucoside of quercetin, which can be obtained from various leafy plants and flowers. Just how it is supposed to act is not clear. When we recall that capillary permeability and so-called "fragility" may be altered either by disorders of the capillary membrane itself or on the other hand by changes in the cement substance between the endothelial cells, and when we realize that the cement substance in turn is affected by all sorts of variations in reaction and in concentration of various blood ions, it becomes clear how complicated the situation is and how difficult a really critical evaluation of any substance from the standpoint of its effect on "capillary fragility" must be. To call rutin vitamin "P" or give it such a general designation as the capillary permeability regulating vitamin hardly seems justifiable as yet. It has been found, however, that the use of rutin may be followed by lessening of capillary permeability under certain conditions as measured by a standard petechiometer test. Since the material seems to produce no toxic effects in man and furnished in the form of a small, practically tasteless pellet which can be taken simply by mouth, a thorough appraisal in clinical conditions in which capillary fragility is altered seems worth while.[291]

Perhaps rutin is not harmless. Two cases of subconjunctival hemorrhages are reported — the first after approximately four and eight weeks of rutin therapy, and the second after one day's administration of this drug.[292]

The scope of penicillin is constantly enlarging. It has been used in the treatment of patients with various cutaneous infections.[293–296] Zee[297] reports a case of relapsing febrile nonsuppurative panniculitis (Weber–Christian disease) observed in a twenty-three-year-old soldier, the lesions being proved by biopsy. Treatment with sulfadiazine was unsuccessful. The findings and symptoms were progressive until the institution of treatment with penicillin. Doses of 20,000 units each were given intramuscularly for a period of fifteen days, to a total of 2,360,000 units. Within three days after the institution of treatment the temperature returned to normal and remained there. No further lesions were noted. The nodules regressed, and during a period of three and a half months there was no recurrence of symptoms or findings.

Physicians treating arthritis with gold are now observing the reactions described years ago by dermatologists who first used this metal in the treatment of discoid lupus erythematosus. For combating these reactions they are fortunate to be able to obtain BAL. This substance, whose chemical name is 2,3-dimercaptopropanol, was developed by the British as an antidote to arsenical blister gases.[298] But long before World War II — indeed during the era of Paul Ehrlich — studies leading to the recognition of the clinical value of BAL were being made.[299] Two serious reactions to gold salt — thrombopenic purpura and granulocytopenia — are described in an article by Lockie et al.[300] Spectacular recovery occurred in each case. The usual course of such complications appears to have been definitely altered by BAL therapy. No change in the status of the arthritis occurred. Ragan and Boots[301] used this drug successfully in 5 patients with dermatitis due to gold. Successful treatment with intramuscular injections of BAL was also reported by Cohen and his associates[302] in 5 cases of acute poisoning due to gold and 1 of acute poisoning due to arsenic. Transient symptoms of BAL toxicity included a sense of warmth in the mouth, salivation, flushing of the face, conjunctival injection, lacrimation and pains in the arms and legs. The number of cases reported is too small to justify a definitely favorable interpretation of results, and yet the prompt clinical effects are impressive and warrant more extended use of this drug in the relief of gold intoxication, so that eventually chrysotherapy of rheumatoid arthritis may be employed more generally and with less fear of the devastating toxic reactions.[302]

Hartman[303] acclaims the use of hormones in dermatology, citing the diseases due to their deficiency or absence of a specific endocrine product responding to substitutive therapy; disorders not due to a specific hormone deficiency, but in which a hormone has a specifically useful effect; and those in which endocrine malfunction may be a precipitating or aggravating factor.

In the first group he mentions adrenocortical extracts and synthetic desoxycorticosterone acetate in Addison's disease; desiccated thyroid or thyroxin in myxedema; pituitary or chorionic gonadotropin in urticaria and dermographia; estrogens in pruritus vulva and senile vaginitis; and the value of insulin in xanthoma diabeticorum and other skin manifestations of diabetes mellitus.

The second group includes epinephrine, pitressin and insulin in urticaria and angioneurotic edema, parathyroid in papular urticaria, pitressin in herpes zoster and desiccated thyroid in xanthoma tuberosum, xeroderma, ichthyosis and seborrheic dermatitis. Estrogens are suggested for therapy in Cushing's syndrome, gonorrheal vulvovaginitis before puberty and vulvovaginitis due to Trichomonas during and after the menopause.

In the third classification there is an interesting discussion of the relation of thyroid or gonadal malfunction in atopic dermatitis, urticaria and acne vulgaris. Hartman[303] states that in the present state of knowledge no good can be done to the acne or atopic dermatitis in male patients and that conceivable harm can be done to the pituitary-gonadal equipment. In the female one gets the impression there are menstrual and premenstrual types, but the persistence of the lesions makes distinction difficult.

I might suggest a word of caution to gynecologists and dermatologists. Three indignant women have sought my advice regarding the increased growth of hair on the face subsequent to the injection of testosterone.

Conclusions

After reading the foregoing discussion, the physician should realize that any cutaneous disturbance that resists simple medication warrants thorough study of the patient. Even a simple wheal may be the beginning of a serious illness; likewise, the sudden onset of a cutaneous eruption in an extremely sick patient may prognosticate a fatal ending. Having remarked on the necessity for the increased use of powers of observation and palpation among physicians, I might decry the extreme to which these powers are used by some dermatologists, who frequently rely too much on observation of cutaneous lesions and neglect complete physical examination and necessary laboratory procedures.

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CASE RECORDS OF THE MASSACHUSETTS GENERAL HOSPITAL

Weekly Clinicopathological Exercises

FOUNDED BY RICHARD C. CABOT

TRACY B. MALLORY, M.D., *Editor*

BENJAMIN CASTLEMAN, M.D., *Associate Editor*

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CASE 33511

PRESENTATION OF CASE

A sixty-seven-year-old businessman entered the hospital complaining of severe shortness of breath.

He had been well until eighteen months before admission, when he first noted dyspnea on climbing stairs and on effort. Several months later he also complained of substernal pressure on effort, for which he was given one of the nitrates. One week before entry, while on a rather strenuous business trip, he developed swelling of the ankles. In addition he was more severely dyspneic than usual. On the evening of entry he became very short of breath and began to cough up frothy sputum. He was given 30 mg. of morphine and sent to the hospital. He denied any chest pain. There had been no soreness of the legs. Because of his poor condition a past history was not elicited.

Physical examination revealed an acutely ill man coughing up blood-tinged, frothy sputum. He was severely dyspneic and cyanotic, with a wet rattle in the throat. The neck veins were distended to the angles of the jaw. The heart was enlarged to percussion, the left border of dullness being 11 cm. from the midsternal line in the fifth interspace. The rhythm was regular, and the sounds were distant. There was a Grade II systolic murmur in the aortic area and over the precordium but loudest along the left sternal border. The lungs were filled with coarse, wet rales. The liver was palpable 3 fingerbreadths below the costal margin. There was moderate pitting edema of the ankles.

The temperature was 98.6°F., the pulse 120, and the respirations 28. The blood pressure was 105 systolic, 80 diastolic.

An electrocardiogram showed normal rhythm at a rate of 90. No abnormal axis deviation was noted. The T waves in the limb leads were low. The P waves and PR interval were normal, the latter measuring 0.16. The precordial lead showed inverted QRS complexes in Lead CF_2; R waves were present in Leads CF_4 and CF_5. The T waves were upright in Lead CF_2 and low but upright in Leads CF_4 and CF_5.

The patient was treated immediately with oxygen, intravenous Cedilanid and tourniquets, with great improvement. Several hours later he woke up and suddenly became extremely dyspneic. When examined he was deeply cyanotic, and the lungs were filled to the apices with moist rales. The pulse was regular. In spite of tourniquets, intravenous administration of Cedilanid, oxygen and finally a phlebotomy he expired suddenly eight minutes after the onset of the attack.

DIFFERENTIAL DIAGNOSIS

DR. HOWARD B. SPRAGUE: This case represents the not unusual diagnostic problem of a patient admitted to the hospital almost in extremis. Such a condition does not permit an adequate history or diagnostic study. In fact, diagnosis in a situation of this sort partakes somewhat of veterinary medicine: the patient cannot describe his own symptoms. I am impressed, however, with the fact that this man in the older age group had been well until the previous eighteen months and then progressed steadily downhill to death. He showed evidence first of failure of the left ventricle. The presenting symptom was dyspnea on exertion, with later some substernal distress, then pulmonary edema and finally secondary failure of the right side of the heart, with increased venous pressure and edema of the ankles. Are we dealing in this age period, assuming that this was a cardiac patient, with degenerative disease of the coronary arteries, with the results of hypertension, with valvular disease or possibly even with some congenital abnormality? It is difficult to avoid using the saturation-bombing type of diagnostic technic in the hope that one will hit something and be given the credit for being a sharpshooter, which is difficult in this case, I think. But the record gives the information that the patient had normal cardiac rhythm, with a low blood pressure, with a heart that was enlarged to the left and with a Grade II systolic murmur over the aortic area, the precordium and most intense along the left sternal border. Although I am sure that auscultation was very difficult because of the dyspnea and noisy chest, it was noted that the heart sounds were distant. There is no note that the second sound had disappeared. An electrocardiogram showed a normal electrical axis. If we emphasize the enlarged left side of the heart and the fact that the systolic murmur, which the examiner was good enough to note, was best heard toward the base rather than the apex, certain conditions come first in our minds. We can mention the possibility that this man had a congenital subaortic stenosis. I have not searched the literature, but in Abbott's[1] 1000 autopsied cases the longest survival period was fifty-eight years. I shall return to the question of the murmurs a little later.

What other conditions should we try to rule out? We think, of course, of degenerative disease of the coronary arteries. There was no evidence of infarction, healed or fresh, in the electrocardiogram. There was no left-axis deviation to support the

assumption of previous hypertension, and in this terminal period the blood pressure was low.

Could the patient have had multiple pulmonary infarcts resulting in cardiac failure of the cor-pulmonale type? There is no note of an accentuation of the pulmonic second sound. It is true that the systolic murmur may have been pulmonic in origin, but we should have more evidence of right-sided heart strain as the primary difficulty. There were no acute episodes in the past suggesting pulmonary infarction. As for the unexplained primary myocardial lesion, the unusual types of true myocarditis that we have seen in these sessions, such as those related to the sulfonamides or isolated or diffuse myocarditis, such cases are usually seen in younger patients; certainly, in the type associated with virus infection, there is very often a story of pre-existing respiratory infection. There is no reason to believe that there was an aortic aneurysm, whether on an atherosclerotic or on a syphilitic basis. We have, however, no x-ray studies on this patient.

To return to the evidence as it is given to us, we should think of calcific aortic stenosis. The points that go with that diagnosis are the male sex, the fact that cardiac failure often appears late in life, the large left ventricle, congestive failure with normal rhythm and the rather rapid downhill course. I am disturbed particularly by the electrocardiographic findings in that there was no left-axis deviation, which one would expect in prolonged disease of the aortic valve. However, yesterday in the clinic we saw a man who had had a known aortic lesion of rheumatic origin for thirty years in which there was little if any left-axis deviation. To get around that difficulty one might mention the possibility of a complicating mitral lesion with a balanced electrical effect on the electrocardiogram, of which we have no clinical evidence, or we might introduce the Bernheim syndrome, which is a bulge of the septum into the right ventricle in lesions that produce marked enlargement of the left ventricle. However, one would expect such a condition to interfere with filling of the right ventricle, and that has been brought forth as an explanation for the signs of primary right-sided heart failure in systemic hypertension.

I know that we have frequently been found wanting in our ability to diagnose calcific aortic stenosis in elderly patients who are in extremis, or who are admitted to the hospital for surgical operation, and who never knew they had anything wrong with the heart. One can infer that a businessman may have had physical examinations throughout his lifetime or even tried to take out life insurance and may have known something about heart disease in the past, but the record contains no such statement. The fact that he was given nitrates previously suggests that before admission he had a doctor, who might tell us about the physical findings. But I confess that I shall have to say that this diagnosis of aortic stenosis appeals to me most. There may have been in the background a congenital bicuspid aortic valve, or some stigmas of a previous rheumatic infection. The final episode, which was associated with pulmonary edema and deep cyanosis, suggests a terminal pulmonary infarction. Statistically I should judge that that would be found. On the other hand patients with aortic stenosis, with characteristic encroachment on the coronary ostia, may die suddenly, and in this case the cyanosis could well have been due to the extreme degree of moisture in the lungs without pulmonary infarction.

DR. TRACY B. MALLORY: Dr. Chapman, would you like to comment?

DR. EARLE M. CHAPMAN: I arrived too late to hear all the discussion but at this point I want to congratulate Dr. Sprague on his astute diagnosis. I am the physician who saw the patient and followed him for some three years. He came to me primarily as a patient with mild diabetes and merely for control of the diabetes. His health had been otherwise good; he had no primary complaint and claimed that he was well, and I thought him to be so. Examination disclosed the harsh systolic murmur, loudest along the left border of the sternum and apex. I thought that it was somewhat transmitted in the aortic area, and yet I did not interpret it at the time as a murmur of aortic stenosis. I thought, rather, that perhaps in youth he had had rheumatic infection and might have mitral insufficiency to a mild degree. He developed a papilloma or carcinoma of the bladder in the summer of 1946, which was treated by fulguration. He withstood the procedure very well, came home and resumed his usual activity. At all times the rhythm was regular, and the rate slow. There was no indication of heart failure until the spring of 1947, when he began to complain of some shortness of breath. He knew that he was aging, — he was by that time sixty-eight years old, — and in climbing the subway stairs was short of breath when he reached the top. At other times he had a feeling of pressure under the sternum — not pain, but simply pressure. This was interpreted by me as being mild angina, and I gave him 0.1 gm. of Aminophylline three times a day. He was not given nitroglycerin. In August, while attempting to transport his wife, who is an invalid, in a sedan chair, with the aid of another friend, he suddenly had a violent attack of shortness of breath. About two weeks later I visited him at his home. At that time he was in the garden, and we had to walk across the entire garden and up to the bowling green and then up another 20 feet to the house and up two flights of stairs. I observed no undue dsypnea or complaint on his part, although I was definitely short of breath. At that time he did not seem to have any signs of congestive failure, and I saw no reason to give digitalis, but I arranged for a consultation with a

member of the Cardiac Department. That was on September 8. You have heard the rest of the history. He died on September 20. I did not see him in the last illness, which terminated in the course of twenty-four hours.

A PHYSICIAN: Did he have an aortic thrill?

DR. CHAPMAN: No; there was no thrill.

DR. SPRAGUE: Some years ago, when we collected a series of cases of "pure" mitral regurgitation and "pure" mitral stenosis, in the group of twenty patients with "pure" mitral regurgitation the systolic murmur was loudest at the apex.[2] We followed these 20 cases for several years, and 2 of the 20 patients with what we thought was originally mitral regurgitation turned out later to have aortic stenosis and the murmur became more intense at the aortic area.

CLINICAL DIAGNOSES

Acute pulmonary edema.
Coronary thrombosis with myocardial infarction?
Coronary heart disease.
Angina pectoris.

DR. SPRAGUE'S DIAGNOSIS

Calcific aortic stenosis.

ANATOMICAL DIAGNOSES

Calcific aortic stenosis.
Acute pulmonary edema, severe.
Arteriosclerosis.

PATHOLOGICAL DISCUSSION

DR. MALLORY: Autopsy showed a considerably hypertrophied heart, which weighed 595 gm., with calcareous aortic stenosis and no other valvular lesions. The cusps of the aortic valve were not interadherent but were markedly calcified, and it was impossible to thrust even the tip of the finger between the calcified masses. The coronary arteries were sclerotic and calcified in part but showed no areas of significant narrowing and no evidence of old thrombosis. The myocardium was free from scars grossly and microscopically, so that all our evidence is that of a pure aortic stenosis. The lungs of course were extremely heavy, weighing over 2400 gm. — as marked a pulmonary edema as one ever sees. There were no other significant findings and no evidence of recurrence of the tumor. The degree of passive congestion in the liver, spleen and kidneys was very slight.

DR. SPRAGUE: Was there pulmonary infarction?

DR. MALLORY: No.

DR. SPRAGUE: Had he had x-ray studies prior to the ones of the heart? Was he a thick individual or thin?

DR. CHAPMAN: He was a thin man. He had an increased anteroposterior diameter of the chest, a barrel-shaped chest, although he had small arms and legs.

DR. SPRAGUE: The most useful thing in diagnosis of this sort, of course, is careful fluoroscopic examination. If the examiner takes a long enough time to get his eyes accommodated he can usually see calcifications in the aortic valves in an elderly person with aortic stenosis and observe the characteristic rotary motion of the valve.

DR. CHAPMAN: He had fluoroscopic studies, and that was not observed.

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CASE 33512

PRESENTATION OF CASE

A fifty-eight-year-old shoe-store operator entered the hospital because of a lump in the neck.

The mass suddenly appeared nine weeks before entry while the patient was taking a bath. It was in the anterior portion of the neck occupying most of the space between the chin and sternum, and was painless, although for several days it was tender, with redness of the overlying skin. The mass had diminished slightly in size. There had been no other symptoms, and the patient felt quite well. Two determinations of the basal metabolic rate taken soon after the lump appeared were reported as normal.

The patient had had diabetes for three years and took 18 units and 36 units of regular insulin on alternating days. The urine remained sugar-free most of the time. He had been treated for syphilis twenty-eight years before entry, and several blood tests since then had been negative.

Physical examination revealed a firm, rubbery, rounded mass, measuring 8 by 7 by 4 cm., projecting from the thyroid area, rather more so on the right. It was slightly warm and nontender, and no bruit or pulsation was present. The mass was fixed but moved vertically with swallowing. Two small, firm lymph nodes were present at the lower end of the left side of the mass at the base of the sternocleidomastoid muscle. A harsh Grade II systolic murmur was audible at the apex and base of the heart. There were small bilateral inguinal hernias.

The temperature was 97.8°F., and the pulse 80. The blood pressure was 180 systolic, 108 diastolic.

Examination of the blood disclosed a red-cell count of 4,980,000, with a hemoglobin of 13.5 gm., and a white-cell count of 7700, with 66 per cent neutrophils. The urine had a specific gravity of 1.022 and gave a ++ test for albumin and an orange test for sugar. The sediment contained an occasional red cell and pus cell. The fasting blood sugar was 173 mg., and the nonprotein nitrogen 31 mg. per 100 cc. The stools were guaiac negative.

X-ray examination showed a mass in the upper anterior portion of the mediastinum measuring 8 cm. across and extending down beneath the manubrium sterni. The esophagus was deviated slightly to the left but was not compressed. In the right lower-lung field was an area of increased density superimposed over the ninth rib posteriorly and the fifth rib anteriorly. This was not seen in a lateral view.

The patient was given no specific therapy. On the fourth hospital day 500 microcuries of radioactive iodine was given, and surface counts showed less activity over the tumor. On the fifth hospital day an operation was performed.

Differential Diagnosis

Dr. Edward Hamlin, Jr. The first intriguing remark in the protocol is that the mass suddenly appeared while the patient was taking a bath. If we accept that as a valid observation, we would immediately come to a full stop, for there is no condition of which I am aware in which a mass of this size can suddenly appear while a patient is taking a bath. Therefore, we must assume that the patient first noticed it then, but that it had been gradually appearing over an indefinite period.

For the moment I shall dispense with the diabetes and assume that it had no relation to the disease.

From the physical examination, one can only conclude that this mass was in some way related to the thyroid gland, since it moved on swallowing. Assuming that this is so, there are three entities that must be considered in the differential diagnosis: cancer, inflammation and a cyst or involutional type of goiter. The fact that the mass was fixed makes it appear unlikely that a simple colloid or involutional goiter was responsible. It is frequently impossible to differentiate chronic thyroiditis and cancer of the thyroid gland. The two small firm lymph nodes, which were found at the lower end of the left side of the mass at the base of the sternocleidomastoid muscle, could be attributed to either disease. The mass seen in the right lower-lung field, only in the anteroposterior view, if we think in terms of one diagnosis could be associated only with cancer.

Nothing else in the protocol seems to be at all helpful in the differentiation of these two conditions. It would be nice to have had a report on whether the vocal cords moved equally.

Dr. Benjamin Castleman: I note in the record that the larynx was examined by a member of the Eye and Ear Infirmary and that the vocal cords were found to be normal.

Dr. Hamlin: Cancer of the thyroid gland frequently invades the region of the recurrent laryngeal nerve or nerves and produces a paralysis, which is almost unheard of in any other condition of the thyroid gland.

Probably the only sure way to make an accurate diagnosis was the method employed, which was operation with a biopsy — a frozen section of the tissue itself — and only then could the proper treatment be carried out.

One obscure sentence in the protocol is that radioactive iodine was given and surface counts showed less activity over the tumor. Less activity than what? In either thyroiditis or carcinoma the amount of iodine that would be absorbed might be very low indeed, and the activity would certainly be less than that over a normal thyroid gland.

On the whole, with a questionable lesion of the lung, I should be inclined to call this carcinoma of the thyroid. Certainly, in several cases that we have recently seen, such a carcinoma was an extremely rapidly growing and very malignant tumor, which I suspect that this proved to be. Therefore, carcinoma of the thyroid gland is my first choice, and the second is chronic thyroiditis.

Dr. William M. Jefferies: When this patient was seen at the Thyroid Clinic there was considerable speculation concerning the diagnosis of the mass in the neck. On palpation this was thought to feel more like carcinoma, but the history of sudden appearance could not be shaken. The patient maintained that the mass had not been present prior to the day he first noticed it since he previously had not seen or felt any unusual swelling in the course of daily shaves, nor had he experienced difficulty in buttoning his collar. His wife corroborated this statement. The associated signs of inflammation, notably tenderness, heat and redness, were also unusual for carcinoma of the thyroid gland, although it could conceivably have resulted from sudden hemorrhage into a rapidly growing tumor.

For these reasons other possibilities were considered. Sudden hemorrhage into a cyst of the thyroid gland might account for the acute enlargement with associated inflammatory signs, but the neighboring lymphadenopathy would be unexplained. Acute thyroiditis might produce such a picture, but with a swelling of this size one would expect to find associated constitutional signs such as fever and leukocytosis. With the history of syphilis in the past, gumma of the thyroid gland was mentioned, but this is such an extremely rare condition (and the patient had apparently had adequate treatment) that it was thought to be unlikely. It was therefore believed by the majority of examiners that this was most probably a malignant tumor.

The studies with the Geiger counter after the administration of a tracer dose of radioactive iodine revealed less radioactivity over the main portion of the mass than over its posterolateral edges, suggesting that the functioning thyroid tissue had been displaced posteriorly by the mass.

Clinical Diagnosis

Carcinoma of thyroid gland?

Dr. Hamlin's Diagnosis

Carcinoma of thyroid gland.

Anatomical Diagnosis

Carcinoma of thyroid gland, giant-cell type.

Pathological Discussion

Dr. Castleman: At operation a firm somewhat fluctuant mass adherent to the strap muscles was disclosed. Aspiration produced a cloudy seropurulent material containing small fragments of tissue, which on frozen section seemed to be necrotic, with a predominance of polymorphonuclear cells. A biopsy of the thick wall of the mass revealed a very undifferentiated carcinoma, and a total thyroidectomy was performed.

We received about 120 gm. of tissue containing nodules of necrotic tumor, some normal thyroid tissue and several lymph nodes that proved to be uninvolved, but the tumor had invaded some of the adjacent strap muscles. The semifluctuant area originally observed and aspirated was a focus of necrosis and hemorrhage and probably accounted, in part at least, for the sudden appearance of the mass.

Microscopically this tumor fits into the more malignant group of thyroid tumors, in which the cells are very large and undifferentiated, some being spindle-shaped and others multinucleated tumor giant cells. Because one portion is sometimes composed predominantly of spindle-shaped cells, the tumor has often been called a sarcoma or carcinosarcoma. However, most pathologists now believe that this type of tumor is fundamentally epithelial and prefer the term "giant-cell carcinoma."

Postoperatively the patient received a total of 5700 r to the anterior portion of the neck and mediastinum over a period of one month.

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THE WISE MEN

AMONG the many inspiring stories associated with Christmas is the familiar one of the wise men who came from the east to Bethlehem. They were only three in number, they were guided through the darkness of the desert by the light of a star, and when they had found that which they sought they left gifts and departed into their own country by another way, fearing Herod.

The proportion of wise men to foolish in the world today is generally the same as it was when Christianity dawned, and we still have our Herods. Men and women continue to be of about the same material that their inheritance has determined, polished or marred by that with which it comes in contact. They are still ignorant, passionate, selfish, sophisticated; cruel and kind; grasping and generous. They have, however, something that the world once lacked — the same star to guide them that the wise men followed.

No one who has been exposed to the great religious forces of the world can escape being influenced in some positive way by them. Names and forms matter little. Each has its divine leadership; each has its Herods, each its crosses, its stars or its crescents; each has its wise men and each its growing tolerance.

It is on this that the salvation of the future will depend. It is on the mutual respect and forebearance and understanding that must be building between races and colors and creeds, each for the others.

SHORTENED ISOLATION REQUIREMENTS

THE advance of knowledge regarding the common communicable diseases has resulted in the shortening of many isolation requirements. A case of meningococcal meningitis, under prompt and adequate sulfonamide treatment, can be considered no longer infectious after five days, and the same thing may be said of the quarantine of treated contacts. Recent clinical investigations have shown that the virus of chicken pox is apparently spread from the respiratory tract for two to four days prior to the eruption, and that the period of infectivity does not appear to extend beyond the fifth day after the appearance of the skin lesions.[1] According to these observations, prolonging the isolation beyond one week, until the scabs fall off, seems to be unnecessary. On the other hand, the old idea that smallpox is contagious for the duration of the crusts is borne out by recent observations.[2] The virus of mumps has never been isolated from the saliva beyond seventy-two hours of the onset of the parotitis; yet no experimental evidence is at hand to determine whether other late manifestations of this disease imply a renewed secretion of the virus through the salivary glands. Therefore, precautions should be continued until this point has been determined.

The infectivity of measles begins during the prodromal catarrhal stage and extends through the height of the eruption, falling off promptly as the rash fades. Again, in whooping cough, it has been shown that 71 per cent of cases originate from ex-

posure to patients in the prodromal catarrhal stage, 18 per cent from exposure in the first week of the paroxysmal stage, 8 per cent in the second week, and 2 per cent in the third week.[3] This curve conforms fairly closely to that of positive cultures obtained with cough plates.[4] In this disease, however, the duration of infectivity, although diminishing materially, warrants isolation for a period of at least three weeks, and even longer for the protection of infants in the first months of life. The problem of isolation for rubella is especially concerned with the protection of women in the early months of pregnancy. Here, as in these other diseases, it is to be emphasized that the period of infectivity begins prior to the stage in which the disease can be recognized by the classic symptoms and that isolation is usually applied too late to be more than partially effective.

Poliomyelitis and scarlet fever present extraordinary problems of isolation because both diseases are peculiar manifestations of widely disseminated infections that, in minor forms, go unrecognized except by cultural methods. New or renewed concepts arrived at through laboratory experiments are often in conflict with observations based on careful field studies in epidemiology, which point to their predominantly air-borne and person-to-person dissemination. Nevertheless, a shortening of the isolation requirements of both these diseases is in progress owing to the results of these studies.

State boards of health are usually better informed in such matters than local boards of health. The former establish minimum requirements of isolation and quarantine, whereas the latter are free to impose stricter measures. If a local board desires to try out a time limit below the minimum established by state or federal standards the right to do so should be granted. Indeed, permission to do so should be granted to qualified medical directors of educational institutions by local and state authorities. In support of this contention one can point to the classic method of curtailing scarlet fever isolation in the city of Bergen, Norway, twenty-five years ago,[5] recently adopted with modification in parts of the United States, and to the satisfactory results of shortened isolation procedures in other common communicable diseases at Rugby School in England.[6] The health authorities of New England have always been ready to co-operate in any well planned studies related to the economic factors of disease control.

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MASSACHUSETTS MEDICAL SOCIETY

DEATHS

COYNE — Thomas J. Coyne, M.D., of Roxbury, died on December 4. He was in his seventy-fifth year.

Dr. Coyne received his degree from Tufts College Medical School in 1901. He was a member of the staffs of St. Elizabeth's, St. Margaret's and Harley hospitals. He was a fellow of the American Medical Association.

Two sisters and a brother survive.

MENARD — Leon J. Menard, M.D., of Fall River, died on August 9. He was in his fifty-sixth year.

Dr. Menard received his degree from University of Vermont College of Medicine in 1919. He was formerly a member of the Fall River Board of Health and was a member of the staff of St. Anne's Hospital.

His widow, three sons, two brothers, three sisters and one grandchild survive.

STONE — Jane Gray Stone, M.D., of Boston, died on May 6. She was in her seventy-fourth year.

Dr. Stone received her degree from Tufts College Medical School in 1911. She was a former member of the Massachusetts Medical Society.

Three brothers and a sister survive.

MISCELLANY

NOTES

The following appointments to the teaching staff of Harvard Medical School were recently announced: Marvin Morton Nachlas, of Boston (A.B. Johns Hopkins University 1940; M.D. Johns Hopkins University 1943), assistant in anatomy; George William Lynch, of Boston (A.B. Harvard University 1929; M.D. Harvard University 1933), assistant in medicine; Peter Bernard Golden, of Boston (S.B. University of Wisconsin 1938; M.D. University of Wisconsin 1940); assistant in surgery; Thomas Simpson Risley, of Waterville, Maine (S.B. Harvard University 1937; M.D. Harvard University 1941), assistant in surgery; Stanton Lee Eversole, Jr., of Charlottesville, Virginia (M.D. University of Virginia 1944), teaching fellow in physiology; Sidney Cobb, of Fort Devens (S.B. Harvard University 1938; M.D. Harvard University 1942), research fellow in biologic chemistry; Harold Mankin, of Teaneck, New Jersey (A.B. Columbia University 1938; M.D. Harvard University 1942), research fellow in biologic chemistry; Robert Buka, Jr., of New York City (A.B. Harvard University 1938; M.D. University of Pittsburgh Medical School 1942), research fellow in medicine; Pedro Maximino Catoggio, of Republica Argentina (M.D. Universidad Nacional de La Plata 1943), research fellow in medicine; Harvey Shields Collins, of Boston (S.B. University of California 1935; A.M. Harvard University 1940; M.D. Harvard University 1943), research fellow in medicine; David Thomas Dresdale, of

Brooklyn, New York (M.D. College of Physicians and Surgeons, Columbia University 1942), research fellow in medicine; Paul Fremont-Smith, of Cambridge (M.D. Harvard University 1946), research fellow in medicine; Edward Phillips, of Los Angeles, California (M.D. University of Southern California 1942), research fellow in medicine; David Harris Solomon, of Brookline (A.B. Brown University 1944; M.D. Harvard University 1946), research fellow in medicine; Edward Donnall Thomas, of Boston (A.B. University of Texas 1941; A.M. University of Texas 1943; M.D. Harvard University 1946); research fellow in medicine; Niilo Oskar Birger Hallman, of Helsinki, Finland (M.D. Medical School of University of Helsinki, Finland, 1943), research fellow in pediatrics; Daniel Charles Tosteson, of Wauwatosa, Wisconsin (no degree), research fellow in physiology; Eugene Leonard Watkins of Worcester (A.B. Clark University 1940; M.D. Harvard University 1943), research fellow in surgery; Lawrence Chappell Kingsland, Jr., of Wakefield (S.B. Mass. Institute of Technology; M.D. Harvard University 1940), instructor in pediatrics; John Schulman, Jr., of New York City (S.B. Yale University 1942; M.D. University of Pennsylvania 1946), research fellow in medicine; William A. Meissner, of Newton Center (A.B. University of Oregon 1935; M.D. University of Oregon Medical School 1938), instructor in pathology; William Fields Caveness, of Raleigh, North Carolina (A.B. University of North Carolina 1929; M.D. McGill University Medical School 1943), assistant in psychiatry; Janice Hodges, of Metairie, Louisiana (S.B. Louisiana State University 1942; M.D. Louisiana State University Medical School 1944), assistant in psychiatry; David John Myerson, of Brookline (A.B. Harvard University 1940; M.D. Tufts College Medical School 1943), assistant in psychiatry; Jackson Smith, of Normal, Oklahoma (A.B. University of Oklahoma 1939; M.D. University of Oklahoma 1943), assistant in psychiatry; Fadil Adjadj, of Mosul, Iraq (M.D. Faculty of Medicine of Paris 1937), research fellow in bacteriology and immunology; Nusret Hasan Fisek, of Ankara, Turkey (M.D. Medical School of University of Istanbul 1938), research fellow in bacteriology and immunology; Ching-tseng Teng, of Chungking, Szechuan Province, China (S.B. Yenching University 1935; M.D. Peiping Union Medical College 1941), research fellow in biologic chemistry; Norman Robert Stanley Hollies, of Ottawa, Ontario (B.Sc. University of Alberta 1944; Ph.D. McGill University 1947), research fellow in physical chemistry; Rudolf Georg Straessle, of Berne, Switzerland (Ph.D. University of Berne 1946), research fellow in physical chemistry; Robert Peter Brittain, of Scotland (B.Sc.-1939; B.L.-1941; M.A.-1943; M.B., Ch.B.-1943; LL.B.-1944; D.P.A.-1943—Glasgow University), research fellow in legal medicine; Arnold Michael Cooper, of Roselle, New Jersey (A.B. Columbia College 1943; M.D. University of Utah Medical School 1947), research fellow in medicine; Lillian Recant, of New York City (A.B. Hunter College, 1941; M.D. Columbia University 1946), research fellow in medicine; and Robert Warren Reifenstein, of Syracuse, New York (A.B. Syracuse University 1943; M.D. Syracuse University 1945), research fellow in medicine.

ROCHE-ORGANON AWARDS IN ENDOCRINOLOGY

Three awards of $500 each have been sponsored by Roche-Organon Inc., hormone manufacturers, for scientists in recognition of their recent, outstanding research in the following fields of endocrinology: animal experimentation, hormone chemistry and clinical endocrinology. The winners of the 1947 awards are Dr. Fuller Albright (clinical endocrinology), Dr. Robert D. H. Heard (hormone chemistry) and Dr. Dwight J. Ingle (animal experimentation). The winners of the awards were selected by the Committee on Awards of the Laurentian Hormone Conference, which consists of Dr. Roy G. Hoskins, chairman, and Drs. Edwin B. Astwood, Thomas F. Gallagher, Allan T. Kenyon, Robert L. Noble and Abraham White. The awards were presented at the 1947 Laurentian Hormone Conference held recently at Sainte Adèle, Quebec, Canada.

MASSACHUSETTS CENTRAL HEALTH COUNCIL

Appointment of a nutrition committee, consisting of the following members, was recently announced by the Massachusetts Central Health Council: Frederick J. Stare, M.D. (chairman) professor of nutrition and head, Department of Nutrition, Harvard Medical School, associate in medicine, Peter Bent Brigham Hospital, member, Food and Nutrition Board, National Research Council, and formerly consultant in nutrition to the Surgeon General, United States Army; Charles C. Lund, M.D., assistant professor of surgery, Harvard Medical School, and visiting surgeon, Boston City Hospital; George Thorn, M.D., professor of medicine, Harvard Medical School, and physician-in-chief, Peter Bent Brigham Hospital; Charles S. Davidson, M.D., instructor in medicine, Harvard Medical School, assistant physician, Thorndike Memorial Laboratory, and assistant director, Fourth Medical Service, Boston City Hospital, and formerly consultant in nutrition to the Surgeon General, United States Army; Robert Harris, Ph.D., professor of nutritional biochemistry, Massachusetts Institute of Technology, and consultant in nutrition to the Pan-American Society and to the Quartermaster General, United States Army; Elda Robb, Ph.D., professor of home economics and head, department of Home Economics, Simmons College; Mrs. Beulah Becker Marble, formerly president, American Dietetic Association; Mrs. Emma May, acting head, Nutrition Board, Massachusetts State Department of Health; Miss May Foley, extension nutritionist, Massachusetts State College, Amherst; and Miss Jean Ackerman, supervisor of nutrition, Boston Visiting Nurse Association.

WORLD HEALTH ORGANIZATION

The World Health Organization of the United Nations demonstrated its effectiveness in the epidemic of cholera in Egypt this fall. An important part of the demonstration was the co-operation of various nations against a common danger.

More than 32 tons of vaccine, plasma and other supplies were shipped from New York by air; China made available 2,000,000 cc. of vaccine, and Indo-China, Japan and Southern Korea more than 3,200,000 cc.

This is the first time in history, according to the report released on December 1, that an epidemic spreading at a rate of more than a thousand new cases a day has been checked within six weeks of its onset. Final figures indicate that 20,129 cases occurred, with 9,760 deaths. The case fatality rate was about 48.5 per cent, as compared with former rates in the vicinity of 85 per cent.

FELLOWSHIPS FOR RESEARCH IN OPHTHALMOLOGY

Dr. Thomas Duane, of Harvard Medical School, and Dr. David Freeman, of Yale University School of Medicine, have been awarded fellowships for research in ophthalmology by the Eye-Bank for Sight Restoration, Inc. Dr. Duane will investigate the metabolism of the cornea under various conditions of storage to determine the factors that affect corneal tissue and make it unsuitable for corneal transplant, and Dr. Freeman will conduct an experiment in tissue transplantation to determine whether embryonic tissues can be grafted upon members of the same or different species. It is hoped that the knowledge acquired through these investigations will aid in the conservation of vision and the restoration of sight among thousands of persons.

CORRESPONDENCE

DIAGNOSIS FIRST

To the Editor: Many years ago Dupuytren told his students, "Diagnosis holds the first rank in our science and is the most difficult part of it; without an exact and precise diagnosis theory is always faulty and practice often incorrect."

After reading the article "Clinical Significance of Malignant Neoplasms of the Thyroid Gland" by Rogers et al. in the October 16 issue of the *Journal*, I am convinced more than ever of the wisdom and soundness of Dupuytren's teaching.

If possible, it is the chief duty of an attending physician to make an exact and precise diagnosis, and when a patient

is attended who has a nodule in the thyroid gland, I know of no way of making such a diagnosis without excising the diseased area and submitting it to a microscopist competent in the diagnosis of tissues.

MALCOLM THOMPSON, M.D.
1711 Heyburn Building
Louisville, Kentucky

Dr. Thompson's letter was referred to Dr. Walter F. Rogers, Jr., whose reply is as follows.

To the Editor: It would be difficult and unwise to question the wisdom of Dupuytren's maxim, which was quoted in Dr. Thompson's letter, and it was not the purpose of our paper to create the impression that an exact and precise diagnosis is not desirable. On the other hand, the purpose was to discuss the incidence, course and importance of malignant neoplasms of the thyroid gland. This included such facets of the problem as the significant number of complications associated with operations on nontoxic goiters and recurrence or development of malignant lesions despite "prophylactic surgery."

Dr. Thompson's letter indicates his belief that if a patient has a nodule in the thyroid gland it should be removed. We also concluded that most solitary nodules should be extirpated and examined microscopically by a pathologist; thus, it seems that here we are in essential agreement. It may be added that the diagnosis of a malignant neoplasm of the thyroid gland, even by histologic examination, is not always unequivocal or easy, for many pathologists admit the great difficulty of determining whether some thyroid nodules are or are not the site of malignant growth.

After data have been accumulated, it is not surprising that their interpretation may differ. However, when all aspects of the problem of malignant neoplasms of the thyroid gland are considered, our judgment of the evidence leads us to believe that it is wise to remove single nodules, but that the routine surgical extirpation of all nodular goiters is not necessary or advisable.

WALTER F. ROGERS, JR., M.D.
Thorndike Memorial Laboratory
Boston City Hospital

CONTRACEPTIVE CARE: A REBUTTAL

To the Editor: Is it a blot on the legislative escutcheon of Massachusetts to have overridden the previously proposed Sangerism? Are we wet blankets or wallflowers in a materialistic and pseudoscientific era to oppose such an enactment? I say pseudoscientific advisedly; any means which seems to justify an academic whim seems to be correct protocol. Is this the scientific method?

This pending bill is a further attempt to legalize the practice of birth control and as such has no place on our legislative referenda. Notwithstanding the pre-eminent roll call of co-sponsors it is my desire to discuss the amendment. The idea of giving contraceptive advice to married women is hardly commensurate with the practice of ethical medicine.

Ethics is nothing more or less than the science of morality. Morality is the norm which delineates between right and wrong. These norms were not established by us nor can they be transcended by us. This situation obtains in every field of endeavor, and by the same token it must be incumbent on every physician so to govern himself.

Is the giving of contraceptive advice right? Does it adhere to the moral law or is it a relative issue? I say, "No," because it is irrevocably alien to the primary ends of marriage. It is an unnatural and artificial frustration of a faculty given to us in marriage.

I am keenly aware of the many conditions precluding childbirth. Do these necessitate the use of means which are essentially wrong? Is not self-control the answer or does it imply courage and devotion? Is it too much to demand that men and women co-operate in a mutual effort to preserve their own integrity or does self-gratification take precedence over self-esteem? Self-control or intellectual discipline is not a trait peculiar to any religion but a rule taught and adhered to by those persons past and present who are the leaders in their fields or chosen profession.

Once the bill is passed, and herein lies the unseen danger, the remaining barriers of normalcy will have been lifted and promiscuity will be the keynote of a modern society. Advice will be sought not only by those in ill health but by all and sundry who seek to follow the lines of least resistance. As it is unnatural to deprive a person of the right to conceive, so it is in contradistinction to the laws of nature to dispense advice frustrating its most sacrosanct privilege.

FREDERICK W. O'BRIEN
Lieutenant (jg) (MC) U.S.N.R.
Great Lakes, Illinois

RESTORATION OF LICENSE

To the Editor: At a meeting of the Board of Registration in Medicine held November 13, it was voted to restore the registration to practice medicine to Dr. Samuel Greenstein, 713 Dudley Street, Dorchester, whose registration was revoked November 17, 1944.

H. QUIMBY GALLUPE, M.D., *Secretary*
State House
Boston

BED REST IN TREATMENT OF TUBERCULOSIS

To the Editor: The Shattuck Lecture by Dr. William Dock, which appeared in the May 22 issue of the *Journal*, is a valuable presentation and has widespread implications. The following comments apply only to the sections dealing with the circulation through the lungs. This article and others by Dr. Dock on the same subject are indeed thought-provoking—I am referring to his studies on the blood supply to the lung apex in the upright and recumbent positions and the consequent effect on the incidence of apical tuberculosis and healing of this and other pathologic processes involving the apex of the lung.

Bed rest, as ordered by many physicians, and recumbent bed rest may be widely different. I have been in tuberculosis sanatoriums where most patients during the day are semirecumbent, semiupright or upright in bed except for the total afternoon rest period of two hours. Dr. Dock's reasons for flat bed rest differ from those commonly taught and printed. Cecil (*Textbook of Medicine*. Sixth edition. 1566 pp. Philadelphia: W. B. Saunders Company, 1943. P. 290) implies that lessened respiratory activity is the important feature of bed rest and does not mention circulation. He also holds that lessened toxicity follows by reason of a decreased blood supply to the lung apex. Dr. Dock reaches the same conclusion (lessened toxicity), considering that an increased blood supply allows for dissipation and control of toxic products and lessened toxicity. Another widely held belief is that apical localization occurs because of decreased aeration in this region (see Best, C. A., and Taylor, N. B. *The Physiological Basis of Medical Practice*. Fourth edition, 1169 pp. Baltimore: Williams & Wilkins, 1945. P. 299). Dr. Dock considers this to be due to an apical ischemia occurring several hours during the day when the patient is upright. I have not thoroughly investigated the literature regarding these physiologic principles.

If Dr. Dock's conclusions are correct — and there is much to recommend them — they should receive wide recognition. Patients with apical tuberculosis should be directed and encouraged to spend more hours flat in bed each day. Studies should be directed toward the determination of how much semirecumbency (with pillows and back rest) can be allowed without interfering with healing of an apical lesion. With this in mind disability in months might be shortened if the patient were appreciably able to increase his daily complete recumbency time.

Another point of interest is the possibility of decreasing the incidence of tuberculosis in contacts by increasing their recumbency time. This would be a hard point to prove, possibly, but speculation might be worth while. Would thirty minutes in a flat position one to three times daily sufficiently increase the apical blood perfusion to prevent implantation with the tubercle bacillus? Would more recumbent time be necessary, or would this procedure have any value? So far, the only preventive measure has been avoidance of contacts and B. C. G. (Bacillus Calmette-Guérin) vaccination in children.

Another point of interest is the occasional basal or midlung lesion. Could there be an anomalous blood supply in which these areas are relatively avascular?

No mention is made of the effect of various positions on the lung subjected to pneumothorax or thoracoplasty. This is important, since many of these patients become ambulatory early.

Sound physiologic principles are necessary to understand and apply sound treatment procedures. Although bed rest has long been advocated it has been for reasons other than those considered by Dr. Dock, and bed rest has by no means always meant flat bed rest. This, of course, is a hard dose for many patients to take, and some effective middle of the road course can possibly be devised.

These observations are particularly pertinent now that early rising has become the fashion in numerous conditions. A great many articles recommend early postoperative rising, early post-delivery rising and ambulation in cardiopathies and arthopathies. I have long hoped that some rational physiologic principles would be found to suggest early ambulation in tuberculosis, but so far no short cuts are known. If it appears that flat rest in bed is superior in healing an apical lesion the back rest and pillows should be removed.

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BOOK REVIEWS

Diseases of the Chest, with Emphasis on X-ray Diagnosis. By Eli H. Rubin, M.D. *The Principles of Surgical Treatment.* By Morris Rubin, M.D. 4°, cloth, 685 pp., with 355 illustrations and 24 color plates. Philadelphia: W. B. Saunders Company, 1947. $12.00.

The text is divided into six sections, each well illustrated and complete with a fairly comprehensive bibliography. The index and the format are good, and the quality of the paper is excellent.

The first section deals with both the anatomic and technical roentgenologic considerations of the chest, together with chapters on respiratory physiology and physical diagnosis. The material devoted to roentgenologic considerations is basic and will be less valuable to the trained roentgenologist than to one entering the field of pulmonary diseases. The portion devoted to bronchospirometry and its clinical application is interesting; that pertaining to signs and symptoms of lung disease adds little to the classic works on this subject. The statement that lack of signs does not indicate absence of disease is, however, well taken.

In the second section, acute and chronic pneumonias are discussed. Acute bacterial pneumonia is analyzed from various standpoints, and the material on viral pneumonias is well presented. Under the heading of suppurative pneumonia, the author includes lung abscess in its embolic, bronchogenic and chronic forms. Space is given to pulmonary diseases caused by the higher bacteria; fungous diseases are presented in a concise manner with an accurate description of coccidioidomycosis. Those interested in industrial disease will find the pulmonary disease of chemical and physical origin well covered, although the inclusion of beryllium and its effects would have made the data more complete, and post-irradiation changes are touched on but lightly.

In the third section, one hundred and fifty-seven pages are devoted to pulmonary tuberculosis and its complications. This is a thorough coverage, circumventing the dogmatism that has often characterized previous publications on this subject. Public-health aspects, from primary infection to the adult form of the disease, are outlined, and many controversial points are discussed. Histoplasmosis, in relation to pulmonary calcification, is emphasized; the indications for and contraindications to pneumothorax and thoracoplasty, as well as criteria for the selection of patients, as presented are in keeping with the advanced work on these aspects of the disease. The Monaldi procedure for the decompression of tension cavities is described, and the conclusion drawn that the chief value of the operation lies in the preparation for thoracoplasty in isolated cases. Extrapleural pneumolysis is mentioned only as a discarded procedure. The authors conclude that lobectomy and pneumonectomy have a "distinct but restricted place in the treatment of pulmonary tuberculosis."

The fourth section is devoted to various chronic pulmonary diseases in which the bronchi play an important role. Pneumoconiosis is well covered, and roentgenograms showing the progression of disease from its early to its late stages are presented. Bronchial obstruction is considered of sufficient importance to deserve two chapters, and foreign bodies are dealt with in some detail. Bronchiectasis, which the authors believe is largely an acquired disease, is discussed from the medical and the surgical points of view, with emphasis on preventive measures. Pulmonary emphysema and bronchial asthma with their complications and sequelae are covered. It is pointed out that compensatory emphysema is prone to develop in adults after pneumonectomy and that this fact should be taken into account in the evaluation of surgery. The authors make the following statement: "Current opinion is swinging to the view that congenital pulmonary cysts are rare and the comparative frequency with which they are found in adults speaks for an acquired origin for most of them." The chapter on neoplasms deals largely with those of bronchogenic origin.

The fifth section covers affections (including neoplasms) of the mediastinum, pleura and diaphragm, as well as pleural effusions, pneumothorax and heart-lung disease. Of particular interest are the portions devoted to Boeck sarcoid, to diseases of the diaphragm and to spontaneous pneumothorax. Pulmonary infarction is presented only briefly; considerably more space should have been given to this important subject.

The general principles of thoracic surgery are presented in the sixth section, with a view to acquainting the physician with the surgical procedures, including bronchoscopy, that are available and with the accepted methods of preoperative and postoperative care of the patient. A chapter is devoted to the treatment of lung abscess, empyema and bronchiectasis. It is pointed out that the old rule of no open drainage of the pleural cavity in empyema, without a fixed mediastinum, still holds. A warning not to overlook the lingula of the left lung in the diagnosis and surgery of bronchiectasis is well taken. Lobectomy is Rubin's procedure of choice for benign neoplasms, and pneumonectomy, in his opinion, offers the only hope for eradication of bronchiogenic carcinoma. In the treatment of pulmonary tuberculosis, the accepted surgical operations noted are intrapleural pneumolysis, phrenic crushing and thoracoplasty. Lobectomy is discussed in some detail in the section on tuberculosis.

On the whole, this is an excellent book for the student of chest disease. In one volume the authors have presented in a concise and well blended manner the anatomy, pathology, physiology, bacteriology, roentgenology, physical diagnosis and medical and surgical therapy. An important contribution is the inclusion of the newer concepts of the pathologic physiology of the chest. In placing emphasis on x-ray diagnosis, they state that they do so "from a conviction that a modern book devoted to the clinical phases of chest diseases that does not do so is of little value" and that "the radiologist will find sufficient background material [in the book] to permit the interpretation of roentgenograms with a greater insight into the nature of the condition than from books devoted primarily to the subject of radiology." This is true, but the further statement that "the range of illustrative material is sufficiently diverse to constitute a working library for students of diagnostic roentgenology" is debatable.

Curare: Its history, nature, and clinical use. By A. R. McIntyre, Ph.D., M.D. 8°, cloth, 240 pp., with 23 illustrations. Chicago, Illinois: The University of Chicago Press, 1947. $5.00.

Curare, long familiar in the physiologic laboratory, has recently come into prominence clinically in the treatment of tetanus, epilepsy, chorea and hydrophobia, as a means of prevention of trauma in shock therapy and as an anesthetic agent. It has also been used in the diagnosis of myasthenia gravis and in the treatment of poliomyelitis. The whole subject — including the physiologic state of the drug, the pharmacologic analysis of the various components of curare and its value to medicine — is clearly set forth in this monograph. Particular attention is paid to the interesting history of the drug, but adequate consideration is also given to the chemistry of curare and the physiologic experiments used to elucidate its action. Reference is made to a standardized preparation that has been developed as Intocostrin. The text is ac-

companied by an adequate bibliography and a good index. That curare has a value as an adjuvant to anesthesia and in protecting the patient from injury in shock therapy is well established.

A History of The American Medical Association 1847 to 1947. By Morris Fishbein, M.D. With *The Biographies of the Presidents of the Association.* By Walter L. Bierring, M.D. And with *Histories of the Publications, Councils, Bureaus and Other Official Bodies.* 4°, cloth, 1226 pp., illustrated. Philadelphia: W. B. Saunders Company, 1947. $10.00.

In connection with the celebration of the centennial of the American Medical Association, the editor of the *Journal of the American Medical Association* has written a chronological history, setting forth the facts in a correct and orderly manner. Accompanying this text, which covers over five hundred pages, are biographical sketches of the various presidents of the American Medical Association by Dr. Bierring and the recipients of the Distinguished Service Medal. These in general are well written and many facts regarding the earlier presidents have been assembled in this book — material previously difficult of access to medical historians. The volume also contains a record of the councils, bureaus and various publications of the American Medical Association. There is an index of both persons and subjects.

As a reference book this volume is of value. Presumably, the facts are accurately given. Some material, however, is poorly presented, and a considerable number of illustrations are unworthy of both the publisher and the organization sponsoring the volume. Printed on heavy coated stock, the book weighs more than six pounds. It can hardly be called a highly successful venture in publishing. This is all the more surprising in view of the well known firm over whose imprint this volume is issued. Although a "must" item for every medical library throughout the world, the book, because of its format and general appearance, will have little appeal to the average physician.

The Physical Background of Perception: The Waynflete lectures delivered in the College of St. Mary Magdalen, Oxford, in the Hilary Term 1946. By E. D. Adrian, O.M., F.R.S. 8°, cloth, 95 pp., with 21 illustrations. New York: Oxford University Press, 1947. $3.25.

Professor E. D. Adrian, a pioneer in the investigation of brain function, summarizes his views on the transmission of the nerve impulse in the peripheral nerves, the sense organs and the brain. Nervous communication appears to be of a relatively simple character, being based on the transmission of repeated waves of activity. These brief disturbances are always made up of the same sequence of physical and chemical changes and, because they are accompanied by small electrical currents, records to show what signals are passing from moment to moment can be made. The electroencephalogram of Berger discloses a 10-per-second rhythm in the brain, associated with the inattentive state, in regions that are playing no part in mental activity because the attention is directed elsewhere. The electrical effects reveal something about the shift of attention but nothing about the way in which the implications of the picture projected on the cortex are recognized.

Thus, many of the problems raised by Adrian have no immediate solution. At present, the picture of mental activity is far from satisfactory.

This book, written in the form of lectures, is a cogent disclosure of present views on brain and mind. No conclusions are reached, and none are justified. The report is one of progress, not a final rendering. As such, Adrian's concise account is highly commendable.

Histopathology of the Ear, Nose and Throat. By Andrew A. Eggston, M.D., and Dorothy Wolff, M.A., Ph.D. 4°, cloth, 1080 pp., with 505 illustrations, 28 plates and 9 tables. Baltimore: Williams and Wilkins Company, 1947. $18.00.

From the title of this book one would not expect to find such a wealth of information pertaining to the ear, nose and throat. The authors have approached the study of histology and pathology of these structures in a most interesting manner. Anatomy, both gross and applied, as well as physiology, is discussed. The bibliography is complete, so that the reader may refer to original articles for more detailed discussion of any subject that he may be particularly interested in. The material, concerning subjects for which the authors are well known for their original contributions, is well presented and described.

The book is most unusual in its departure from the style of other works on histopathology because of its being so comprehensive. It will be particularly appreciated by the otolaryngologist, who will not find it necessary to delve through numerous volumes to find the information concerning the ear, nose and throat that he wishes.

The illustrations are good and supportive to the text.

It would be unreasonable to assume that some chapters could not be improved upon in some passages, but this criticism in no way detracts from the over-all value of the content. The volume is particularly recommended to residents, specialists and teachers in otolaryngology. Those who contemplate certification by the national boards will find the book invaluable. No institution with a department of ear, nose and throat should be without it.

BOOKS RECEIVED

The receipt of the following books is acknowledged, and this listing must be regarded as a sufficient return for the courtesy of the sender. Books that appear to be of particular interest will be reviewed as space permits. Additional information in regard to all listed books will be gladly furnished on request.

Concise Anatomy. By Linden F. Edwards, Ph.D., professor of anatomy, Ohio State University. 4°, cloth, 548 pp., with 324 illustrations. Philadelphia: The Blakiston Company, 1947. $5.50.

Hypnotism Today. By Leslie M. Lecron, B.A., consulting psychologist and psychotherapist, and Jean Bordeaux, M.A., Ph.D., consulting psychologist and psychotherapist. With a foreword by Milton H. Erickson, M.D., director of psychiatric research, Wayne County Hospital, Eloise, Michigan. 8°, cloth, 278 pp. New York: Grune and Stratton, 1947. $4.00.

Signs and Symptoms: Their clinical interpretation. Edited by Cyril M. MacBryde, M.D., assistant professor of clinical medicine, Washington University School of Medicine, and assistant physician, Barnes Hospital, St. Louis, Missouri. 4°, cloth, 439 pp., with 74 illustrations and 6 plates. Philadelphia: J. B. Lippincott Company, 1947. $12.00.

Rhinoplasty and Restoration of Facial Contour: With special reference to trauma. By Jacques W. Maliniac, M.D., clinical professor of plastic reparative surgery and associate attending plastic surgeon, New York Polyclinic Medical School and Hospital, and attending plastic surgeon, Sydenham Hospital, New York City. 8°, cloth, 327 pp., with 214 illustrations. Philadelphia: F. A. Davis Company, 1947. $7.50.

Human Gastric Function: An experimental study of a man and his stomach. By Stewart Wolf, M.D., assistant professor of medicine, Cornell University Medical College and New York Hospital; and Harold G. Wolff, M.D., associate professor of medicine, Cornell University Medical College and New York Hospital. With a foreword by Walter B. Cannon, M.D. (Oxford Medical Publications.) 8°, cloth, 262 pp., with 55 illustrations. New York: Oxford University Press, 1947. $5.00.

NOTICES

ANNOUNCEMENT

Dr. Bernard M. Jacobson announces the removal of his office for the practice of internal medicine to 422 Beacon Street, Boston.

PHI DELTA EPSILON LECTURE

Dr. Frank H. Lahey, of the Lahey Clinic, will discuss "Hyperthyroidism and the Antithyroid Agents" at a lecture sponsored by the Tufts Chapter of Phi Delta Epsilon, held in the amphitheater of the Beth Israel Hospital on Wednesday, January 14, at 8:30 p.m. Interested physicians and medical students are cordially invited to attend.

(*Notices continued on page xiii*)